1993 CROP

HARD RED SPRING WHEAT QUALITY REPORT

Physical, Chemical, Milling, and Baking Characteristics

United States Department of Agriculture
Agricultural Research Service
North Central Region

HARD RED SPRING WHEAT QUALITY REPORT

ON SAMPLES RECEIVED FROM THE 1993 CROP

Spring and Durum Wheat Quality Laboratory
USDA, Agricultural Research Service
Harris Hall, NDSU
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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
in cooperation with
STATE AGRICULTURAL EXPERIMENT STATION

QUALITY EVALUATION OF HARD RED SPRING WHEAT CULTIVARS

1993 CROP[1/]

by

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1/This report represents cooperative investigations on the quality of Hard Red Spring Wheat Cultivars from the 1993 crop. Some of the results presented have not been sufficiently confirmed to justify varietal release. Confirmed results will be published through established channels. Cooperators submitting samples for analysis have been given analytical data on their samples prior to release of this report. This report is primarily a tool for use by cooperators and their official staff and to those individuals having direct and special interest in the development of agricultural research programs.

This report was compiled by the Agricultural Research Service, U. S. Department of Agriculture. Special acknowledgment is made to the North Dakota State University for use of their facilities and the services provided in support of these studies. The report is not intended for publication and should not be referenced in either literature citations or quoted in publicity and advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

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1993 COOPERATING AGENCIES AND STATIONS

The cooperative agencies and stations conducting the varietal plot and nursery experiments from which the 1993 spring wheat samples were received are listed below:

Montana Agricultural Experiment Station

Bozeman, Havre, Sidney

North Dakota Agricultural Experiment Station

Minot, Langdon, Dickinson,
Williston, Carrington

South Dakota Agricultural Experiment Station

Brookings, Selby

Idaho Agricultural Experiment Station

Aberdeen

Wyoming Agricultural Experiment Station

Powell

Washington Agricultural Experiment Station

Pullman

A complete list of all cooperating agencies, stations, and personnel for the year will be found in the report by R. H. Busch, et al., Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1993.[4/]

4/Busch, R. H. Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1993. Agricultural Research Service, U. S. Department of Agriculture and State Agricultural Experiment Station, St. Paul, MN.

INTRODUCTION

Samples of standard cultivars and new selections of hard red spring wheat grown in cooperative experiments in spring wheat regions of the United States are milled each year by the USDA/ARS, Wheat Quality Laboratory. Wheat and their corresponding flours are evaluated for physical and chemical properties, and the flours are baked to determine bread characteristics. The purpose of this report is to make available to the cooperators and other interested parties, quality data on the standard varieties and new selections of hard red spring wheat from the 1993 crop.

The same general format and techniques were used in evaluating the wheat as outlined in quality reports from previous years. The same computer scoring system has been used for the past several years, hence some faulting values differ slightly from earlier years. In general, data contained in this report are comparable to data in past reports. Statistical data is included for each cultivar and experimental line from the Uniform Regional Nurseries.

The evaluation of a wheat sample involves the analysis of kernel characteristics, milling performance, and baking performance. A brief description of testing methods employed is shown on pages 9 to 11 of this report. The various characteristics and any outstanding features or deficiencies of each cultivar are evaluated from results of these tests. No specific comments are made regarding mixogram patterns derived from samples. However, reference mixograms, shown on page 21, illustrate ranges from which sample mixograms may be compared.

SOURCE OF THE 1993 CROP SAMPLES

Tests were performed on 1467 samples which were received from 22 stations in 9 states. However, data on 1037 samples is excluded from this report, because the information was of interest only to plant breeders at specific experiment stations.

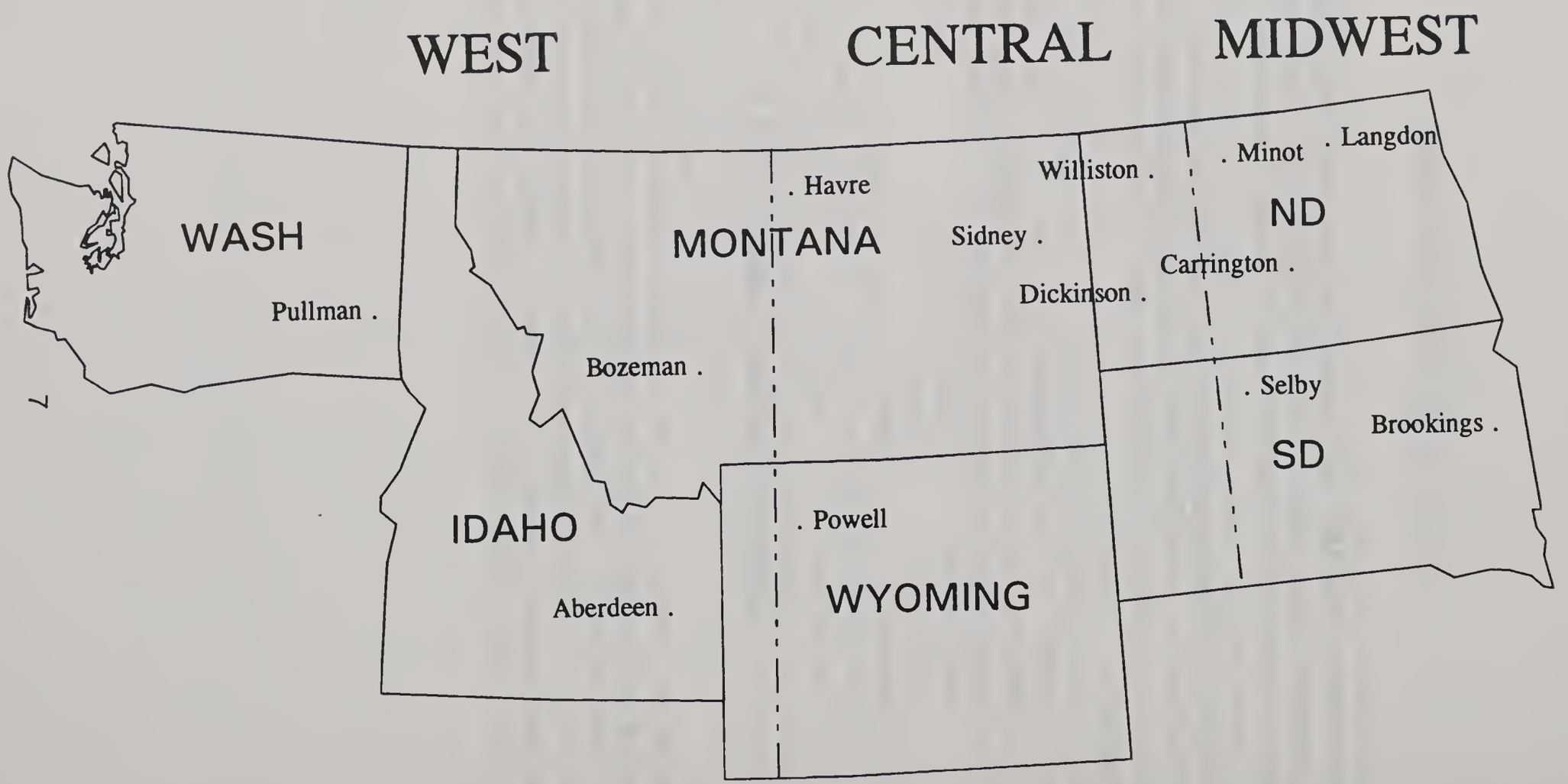
Data presented in this report represents the evaluation of spring wheats received from Uniform Regional Nurseries. The Field Plot Nurseries were not reported this year due to environmental factors during the 1993 crop year. The following stations were cooperators:

Idaho:	Aberdeen
Montana:	Bozeman, Havre and Sidney
North Dakota:	Minot, Langdon, Dickinson, Williston and Carrington
South Dakota:	Brookings and Selby
Washington:	Pullman
Wyoming:	Powell

UNIFORM REGIONAL NURSERY TRIALS

The geographical areas from which the samples were received are shown on page 7. Spring wheat cultivars and experimental lines included in the Uniform Regional Nursery trials are listed on page 8. The West area was comprised of three stations, the Central area four stations, the Midwest area five stations. The geographical areas tend to represent the movement of wheat in the market. Included in this report is statistical data on quality factors of each cultivar or experimental line from each geographical location.

Georgraphical areas from which wheat samples were obtained.



ENTRIES IN THE UNIFORM REGIONAL HARD RED SPRING WHEAT PERFORMANCE NURSERY

The 32 entries in the 1993 URHRSWPN are listed below:

Entry No.	Cross or Variety	CI No. or Selection No.	Year Entered	Source
1.	Marquis	3561	1929	Canada
2.	Chris	13751	1969	USDA-MN
3.	Era	13986	1972	USDA-MN
4.	Stoa		1987	ND
5.	Butte86		1987	ND
6.	SD8072	SD8052/SD2971	1991	SD
7.	SD8073	SD8052/SD2971	1991	SD
8.	SD8070	Guard/Sharp	1992	SD
9.	SD0005	MN7663/SBY354A	1993	SD
10.	SD0010	YW352/SBZ004A	1993	SD
11.	MN89103	MN85235/MN84377	1993	USDA-MN
12.	MN90071	MN86004/MN85129	1993	USDA-MN
13.	MN90114	MN86499/MN86033	1993	USDA-MN
14.	MN90253	MN86383/MN86128	1993	USDA-MN
15.	SBE0437	MN7663/SBY354A	1993	USDA-MN
16.	SBE0444	Wheaton/Erick	1993	USDA-MN
17.	ND671	Stoa's'/ND620	1991	ND
18.	ND673	Grandin/Stoa's'	1992	ND
19.	ND674	Grandin*2/ND643	1993	ND
20.	ND677*	ND622*2/Cutless	1993	ND
21.	ND678	Stao's'/3/IAS20*4//H567.71 //Amidon	1993	ND
22.	XW398A4	MN7357/SD2903	1991	NDSURF
23.	N86-0348	HS81-0074/Alex	1992	AGRIPRO
24.	N90-0666	Bergen/N86-0111	1993	AGRIPRO
25.	N90-0671	Bergen/N86-0111	1993	AGRIPRO
26.	N90-0700	Prospect/Amidon	1993	AGRIPRO
27.	N88-3140	Sinton/Stoa	1993	AGRIPRO
28.	MT8849	RS6880/MT7819	1992	MT
29.	BW152	Katepwa/RL4509 (Lr21)	1992	AGCAN-M
30.	8601AE3C*	BW90/Lancer/BW608	1993	AGCAN-S
31.	BZ 988-351	Aim/906R	1993	WPB
32.	BZ 984-334	MSFRSP	1993	WPB

* solid stem lines for sawfly resistance

METHODS

Following are terminology and testing methods used in the evaluation process:

Test Weight Per Bushel - The weight per Winchester bushel of cleaned, dry wheat subsequent to passing the sample through a Carter-Day dockage tester.

1000-Kernel Weight - The weight of 1000 kernels was determined by counting, using a Seedburo seed counter, the number of kernels in 10 g samples of cleaned, hand-picked wheat.[5/]

Kernel Size - The percentages of the size of kernels (large, medium and small) were determined using a wheat sizer as described by Shuey[6/].

The sieves of the sizer were clothed as follows:

Top Sieve - Tyler #7 with 2.92 mm opening
Middle Sieve - Tyler #9 with 2.24 mm opening
Bottom Sieve - Tyler #12 with 1.65 mm opening

Milling - The samples were cleaned by passing the wheat through a Carter-Day dockage tester and through a modified Forster scourer (Model 6). The clean, dry samples were pretempered to 12.5% moisture for at least 72 hours, then tempered to 15.5% moisture and allowed to stand overnight prior to milling.

5/Mention of a trademark name or a proprietary product does not constitute a guarantee or warranty of the product by the U. S. Department of Agriculture, and does not imply its approval to the exclusion of other products that may also be suitable.

6/Shuey, William C. A Wheat Sizing Technique for Predicting Flour Milling Yield. Cereal Science Today 5:71-72,75 (1960).

The Uniform Regional Nursery spring wheat samples were milled in Brabender Quadrumat Senior mill heads. The stock from the Break head was sifted for 60 sec. on a strand sifter using #35 and #80 Tyler sieves. The throughs of the #80 sieve were classified as break flour; the overs of the #35 sieve classified as bran; and the overs of the #80 sieve were passed through the reduction head. The reduction stock was sifted for 60 sec. on a #80 Tyler sieve. The throughs were classified as reduction flour and the overs were shorts. The break and reduction flour we combined for the patent flour.

The Field Plot Nursery samples were milled on a Buhler continuous experimental mill. The Buhler mill had been slightly modified for better comparison with commercial milling operations. Break scalping sieves were clothed with #54 stainless steel wire. Reduction scalping sieves were clothed with #58, #66 and #105 stainless steel wire for the first, second and third reductions, respectively. All flour sieves were clothed with #135 stainless steel wire.

The six flour streams obtained from Buhler milled wheat were combined and represented patent flour. The extraction of a good milling wheat using this flow is approximately 68% and is comparable to a commercial "long patent" extraction flour. At a 68% flour extraction, changes in flour ash are most sensitive to changes in percent extraction.

Hardness Test - Wheat hardness scores are determined according to AACC Method 39-70A. The procedure involves grinding the wheat samples in a Udy grinder and obtaining reflectance data from a Technicon 450 near infrared analyzer. Wavelengths used were 1680 nm and 2230 nm. This procedure was developed by Mr. Karl Norris, USDA, Beltsville through a co-operative research project in which the Hard Red Spring and Durum Wheat Quality Laboratory also participated. Hard red spring wheats generally have scores between 60 and 85.

Protein Content - Wheat and flour proteins were determined from NIR reflectance data, the Kjeldahl procedure, or Leco Nitrogen determinations. Nitrogen values, as determined the Kjeldahl procedure or Leco, were multiplied by 5.7 to calculate protein values.

Mineral or Ash Content - Wheat or flour ash was determined by measuring the residual weight of minerals remaining after incinerating the sample for approximately 16 hours at 575^{0}C. The results were reported as percentages of the sample weights.

Mixograph Analysis - Mixograms for each flour sample were determined by using 30 g of flour and adding 20 cc of water. The sensitivity spring setting was set at 10. All mixograms were run with constant weight of flour and volume of water. Absorptions reported were adjusted according to the peak heights of the mixograms.

Mixogram Patterns - Reference mixogram patterns shown on page 21 illustrate the different types of mixograms that were obtained. A single number is assigned each pattern to characterize and simplify the classification of the curves. The larger numbers indicate stronger curve characteristics.

Baking Procedure and Formula - Following is the baking formula used:

100% flour	3% Non-fat Dry Milk
2% salt	3% yeast
5% sugar	2% shortening (Crisco, melted) - 100 gram loaves
	1% shortening (Crisco, melted) - 25 gram loaves

Samples were mixed to optimum dough development in National Manufacturing mixers, the micro mixer for 25 g samples and the 100 g special mixer for 100 g samples. Bromate (10 ppm) for oxidation and Fungal Amylase (Doh-Tone)(15SKB units) for enzymatic supplement were added to each sample. All doughs were molded in a Roll-Er-Up molder. Samples undergo 3 hour fermentation, 1 hour proof and 20 minute bake time.

Absorption - The amount of water, expressed as percent of flour, required for optimum dough consistency.

Crumb Color - A value was determined by comparing the crumb color of the tested sample with the crumb color of a baking standard. The standard flour was the variety Grandin grown at Minot, ND.

Loaf Volume - The volume of the baked loaf as determined by rapeseed displacement.

All values (protein, ash and absorption) were reported on a 14% moisture basis.

DISCUSSION

The following discussion presents the basic techniques and criteria used in the quality evaluation of the Hard Red Spring Wheat cultivars. Evaluations are based on the categories of kernel characteristics, milling performance, and baking score.

Each evaluation category is important. For example, a sample could be of a sufficiently poor quality for a given category to suggest elimination from future testing. However, a sample submitted for the first time and found to be questionable should be tested again to confirm previous evaluations. A sample which is consistently rated as questionable should be discarded.

Five kernel characteristics (test weight, 1000 kernel weight, percent small kernels, wheat ash, and wheat protein) were independent variables used to calculate the dependent variable, wheat score. Four milling characteristics (percent extraction, ash content @ 65% extraction, flour protein, and milling character) were used to calculate the dependent variable, mill score. Seven characteristics (mixogram pattern, bake absorption, mixing time, dough characteristics, crumb color, crumb grain, and loaf volume) were used to calculate the dependent variable, bake score. These three dependent variables become independent variables used to calculate a dependent variable, the general evaluation, which is an overall general score.

The current computer program used by the Wheat Quality Laboratory was designed and implemented to perform the analysis and tabulation of data generated from each station. The program has been in operation for nine years and utilizes the Statistical Analysis Systems (SAS Institute, In., SAS Circle, Box 8000, Cary, NC 27511).[7/]

Wheat samples are tested and data collected on 18 quality factors or variables. The computer program then grades each factor against predetermined faulting values and assigns major (MJ) or minor (MI) faults where applicable. The data is then broken down into 3 major areas which relate more directly to agronomic, industrial, and consumer requirements. Each sample is assigned a score of 4 in the areas of Wheat Characteristics, Milling Characteristics, and Baking Characteristics. The program then adjusts the score (4 = Good promise, 3 = Some promise, 2 = Little promise, 1 = No promise) depending upon the number of major and/or minor faults assigned to that sample.

7/Nolte, L.L., Youngs, V.L., Crawford, R.D., and Kunerth, W. H. 1985. Computer program evaluation of hard red spring wheat. Cereal Foods World 30:227-229.

A general score is a numerical score of 1-4 and is determined by calculating the mean of the other 3 scores - wheat characteristics, milling characteristics, and baking characteristics.

The following tables list the variables used in each scoring area and their specific faulting and scoring values.

WHEAT SCORE

Variables Included	Faulting Limits Minor	Faulting Limits Major	Effect on Score Minor	Effect on Score Major
Test Weight (#/bu)	57.9	56.9	-	-1
1000 Kernel Weight (g)	Mean-2.1	Mean-5.1	-	-1
Small Kernels (%)	8	18	-	-1
Wheat Ash (%)	1.71	1.81	-	-
Wheat Protein (%)	13.9	12.9	-1	-2

MILL SCORE

Variables Included	Faulting Limits Minor	Faulting Limits Major	Effect on Score Minor	Effect on Score Major
Flour Extraction[a/] (%)	Mean-2.1	Mean-4.1	-1	-2
Flr. Ash @ 65% Ex.[b/] (g)				
Large Samples	.47	.51	-	-1
Small Samples	.57	.61	-	-1
Flour Protein (%)	12.9	12.4	-1	-2
Milling Character[c/]	3	2	-1	-2

a/ The mean, or average, is calculated using the standards tested with that station.

b/ Large samples are milled on a Buhler experimental mill, and small samples are milled on a Quadrumat Jr. experimental mill. Different values are used to compensate for differences in the efficiency of the two mills and their respective procedures.

c/ 5 = Normal. 4 = Normal-soft. 3 = Soft-normal. 2 = Soft. 1 = Gritty. 0 = Very soft.

BAKE SCORE

Variables Included	Faulting Limits		Effect on Score	
	Minor	Major	Minor	Major
Mixogram Pattern[a/]	2,7 or 8	1, or 9-11	-	-1
Bake Absorption (%)	61.9	60.4	-1	-2
Mix Time (min.)	5.75-8.00	over 8.00	-1	-2
	or	or		
	2.00-2.75	0-1.75	-1	-2
Dough Characteristic[b/]	6	4 or less	-	-2
Crumb Color[c/]	7.5	5.0 or less	-	-1
Crumb Grain[d/]	8.0	5.0 or less	-	-1
Loaf Volume[e/] (cc) Lg.	Mean-55	Mean-105	-1	-2
Sm.	Mean-21	Mean-31	-1	-2

a/ Refer to reference mixograms for numerical curve pattern.
(1 = very weak, 11 = very strong)

b/ 9 = Elastic. 7 = Slightly pliable.
5 = Very pliable. 4 = Bucky
2 = Very, very pliable. 0 = Dead.

c/ 10.0 = Bright, white
8.0 = Soft, slightly creamy
6.0 = Creamy
4.0 = Very creamy
2.0 = Dull, very gray

d/ 10.0 = Close, elongated, and uniform cells; fine grain and thin walls; soft texture.
8.0 = Slightly open, elongated cells; fine grain and thin walls; soft texture.
6.0 = Open, elongated to round cells; fine grain and thick walls; slightly coarse texture.
4.0 = Open, round cells; coarse grain and thick walls; coarse to rough texture.
2.0 = Irregular, open and large cells; coarse grain and thick walls; rough or soggy texture.

e/ Average values are calculated using the standards tested with that station. "Lg." refers to the faulting and scoring values for 100 g. loaves. "Sm." refers to the faulting and scoring values for 25 g. (pup) loaves.

All samples were compared with a milling and baking standard representative of the crop year. Agronomic and climatic conditions of the individual locations can affect the quality of the wheat such that the evaluation of all samples, including commercial cultivars, harvested from these locations may be classified as questionable to unsatisfactory. Therefore, the evaluation ratings from one station may not be compared with ratings from other stations, but only provide a comparison within that station. For example, an area may produce low protein wheat with large and plump kernels, good milling performance, and good kernel characteristics, but with low flour protein and unsatisfactory baking performance such as short mixing time, low loaf volume, and weak dough characteristics. The wheat from this area could not be considered a strong spring wheat and would not maintain the quality expected from the spring wheat producing area. An acceptable variety should have tolerance to a wide range of environmental conditions.

Kernel Characteristics are important in determining the initial value of wheat. Poor kernel characteristics could disqualify a new variety from further consideration. Because of the present wheat grading system, high test weight is desirable. Plump kernels are desirable because of their high ratio of endosperm to bran. Low 1000-kernel weight and small kernel size distribution affect milling performance due to their high ratio of bran to endosperm. Wheat ash is an important factor when comparing one cultivar against other standard cultivars. Wheat with a high mineral content may yield flour with a high ash content. Wheat protein quality and quantity must be considered as an important characteristic when comparing cultivars grown at the same location.

Milling Performance is a very important characteristic of spring wheats. Low extraction and high flour ash are major factors unacceptable under commercial milling operations. Flour mineral contents are reported at a constant extraction of 65% so that flour extraction rates among cultivars are easily compared. As a general rule, an increase of 0.01% in ash content is equivalent to an increase of approximately 2% in flour extraction.

Milling characteristics: Wheat comprising soft kernels requires different milling techniques when compared with wheat of uniform hard kernels. On commercial mills flowed for hard vitreous spring wheats, the introduction of soft wheats into the mill will result in milling problems. Likewise, a sample which is extremely hard and vitreous will mill differently. Both types of wheat (soft and vitreous) require different roll pressures, clothing, sifter surface, and temper to be milled properly. The blending of normal bread wheats with soft wheats or extremely hard, vitreous wheats is undesirable since they are not compatible in the milling operation. Normal to soft score indicates that the sample shows a tendency toward softness of character on the flour mill stocks and extraction. Adjustments would either have to be made in the milling flow or in tempering procedures to compensate for differences in kernel hardness. Properties of soft wheat may or may not be compatible with other wheats. Therefore, maintaining pure varieties with uniform milling characteristics is important.

The amount of protein recovered in flour from wheat is important. High protein wheats yielding low protein flours are not desirable. Such wheats would contain much of the protein distributed in the outer portion of the kernels resulting in excessive protein in the feed streams. Therefore, higher protein wheat would be necessary to yield a flour with protein content comparable to that of a wheat that yields optimum flour protein.

Mixogram Patterns are important in estimating the strength and mixing tolerance or potential mixing tolerance of a flour. From the standard mixogram patterns shown on page 21, patterns 6 - 8 indicate flours with optimum mixing tolerance and gluten strength. Mixogram patterns 9 - 11 indicate flour samples with longer mixing times, and stronger gluten characteristics, whereas, patterns 1 - 5 indicate flours with weaker gluten characteristics and shorter mixing times. Both the pattern and length of the curve are important, and both must be considered in the evaluation. Abnormal curves, such as sway-back or long initial times to incorporate water, indicate undesirable characteristics.

Baking Evaluation takes into account the flour water absorption, mixing time, dough characteristics, loaf volume, crumb texture, and machinability. Flour samples with low water absorptions would be unsatisfactory. Samples with extremely short mixing times would relate to weak gluten characteristics and be considered undesirable. Samples evaluated in the minimal range for these values require further testing to determine whether definite deficiencies exist.

Doughs having mellow to weak properties show a tendency towards weakness. Doughs having mellow to strong properties show a tendency to be strong, whereas, doughs having strong to mellow properties show a tendency to be mellow. Since these characteristics are evaluated by subjective means, the tendencies are estimated which allows for double grades.

The crumb grain or appearance of the interior of the loaf shows how well the sample stood up during baking and may indicate some deficiencies which have been observed during the baking test. Crumb grain is likely related to gluten protein properties (quantity and quality).

Bread loaf volume indicates potential strength of doughs in a different manner than mixing time or dough characteristics. Optimum loaf volume demonstrates the capacity, or lack thereof, for the dough to expand under pressure and to contain the entrapped gases during expansion. Weak doughs are like balloons which burst when blown up. They tend to collapse and yield breads with low loaf volumes, or yield breads with extremely large volumes containing large holes in the interior. Low protein flours produce extensible doughs which exhibit properties similar to putty. These doughs do not expand adequately during fermentation or baking and thus produce bread with low loaf volumes. Tough and very bucky doughs are bound too tightly and impede expansion of the gases resulting in breads with low loaf volume. Loaf volume is a characteristic probably related to gluten functionality in the dough.

Statistical Data including mean, SD, minimum and maximum values and range are shown for each cultivar within the three geographical areas - West, Central, and Midwest. This data provides information on the variability of each selection within the Uniform Regional Nurseries for each of the parameters measured.

UNIFORM REGIONAL NURSERY SAMPLES - 1993 CROP

Discussion of URN

A total of 430 URN samples were received from 13 stations in 6 states. Twenty-seven URN selections were experimental lines and the remainder were commercial cultivars. Along with the experimental lines, the cultivars Butte 86, Chris, Era. Marquis, and Stoa were included in the statistical analysis of the URN samples. Each sample was evaluated for kernel characteristics, milling performance, and baking properties. Some selections were not included in the baking evaluation because of poor kernel characteristics or rheological dough properties.

Data from the Midwest area were from five stations -- Langdon, Minot, and Carrington, North Dakota, and Selby and Brookings, South Dakota. Quality data of the spring wheat cultivars and experimental lines is shown in Tables 1-5. Statistical data is shown on Tables 6-13.

Data from the Central area were from five stations -- Willistion and Dickinson, North Dakota, Havre,and Sidney, Montana, and Powell, Wyoming. Quality data or the spring wheat cultivars and experimental lines is shown in Tables 14-18. Statistical data is shown on Tables 19-26. Flour samples from Powell, Wyoming were not baked because of undesirable rheological dough properties.

Data from the West area were from three stations -- Bozeman, Montana, Aberdeen, Idaho, and Pullman, Washington. Quality data of the spring wheat cultivars and experimental lines is shown in Tables 27-29. Statistical data is shown on Tables 30-37.

EXPLANATION OF ABBREVIATIONS LISTED UNDER THE HEADINGS AND THOSE THAT MAY BE LISTED UNDER MINOR AND MAJOR DEFICIENCIES

TW = Test Weight
KW = 1,000 Kernel Weight
LG = Large Kernels
SM = Small Kernels

WHT ASH = Wheat Ash
WP; WHT PRO = Wheat Protein
EX = Flour Extraction
A65 = Ash at 65% Flout Extraction

FP; FLR PRO = Flour Protein
MC; MILL CHAR = Milling Characteristics
MIX ABS = Mixograph Absorption

MX; MIX PAT = Mixograph Pattern Score
BA; BAKE ABS = Actual Bake Absorption
MT; MIX TIME = Actual Dough Mixing Requirements

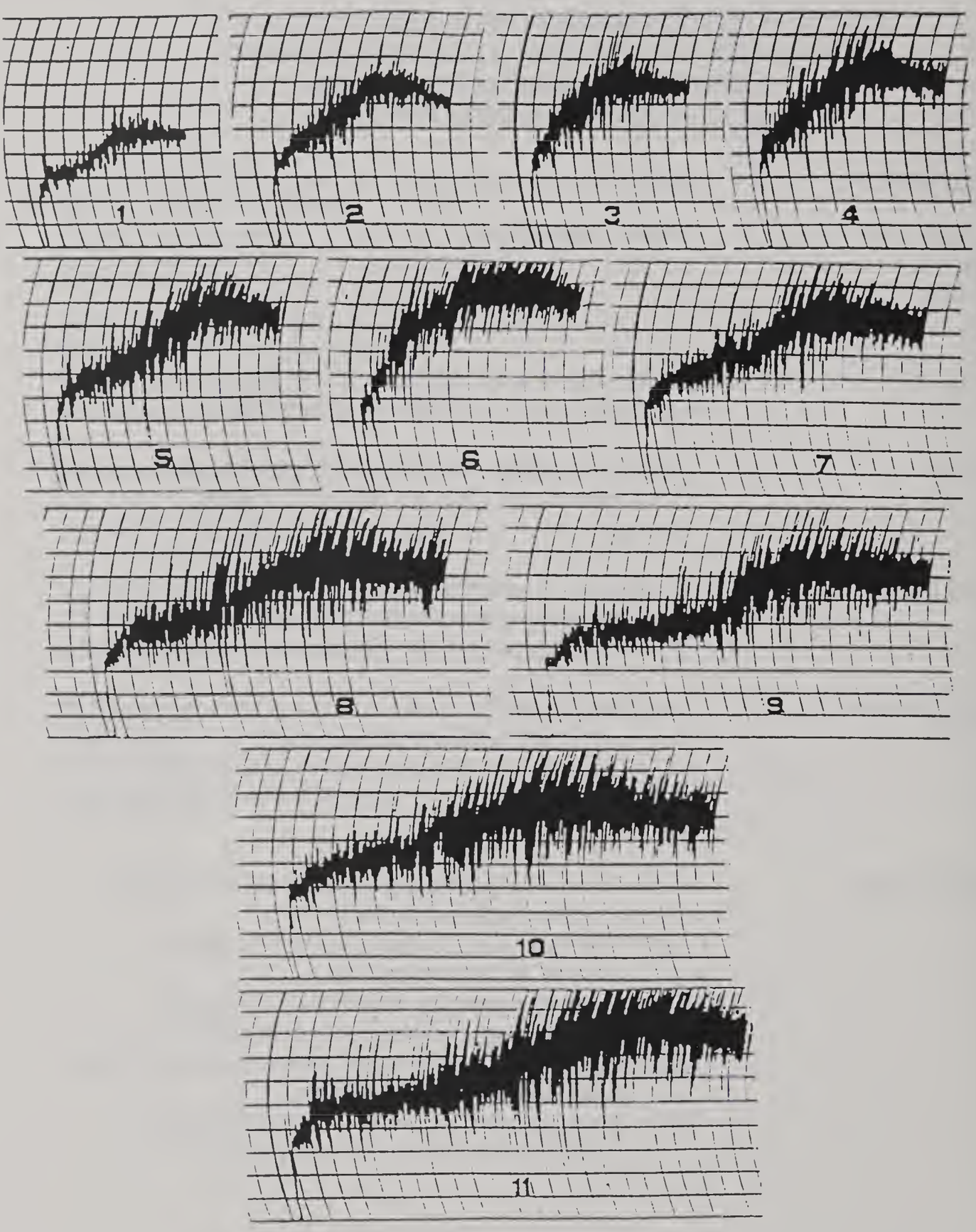
DC; DOUGH CHAR = Dough Handling Characteristics
CC; CRUMB COLOR = Standard 8.0
CG; CRUMB GRAIN = Standard 8.0
LV; LOAF VOL = Loaf Volume

FOOTNOTES FOR TABLES

These footnotes are applicable for specified column headings in all tables that follow

Column Heading	Footnote
WHT ASH, WHT PRO ASH@65%, FLR PRO BAKE ABS (100 gr. loaf)	14% Moisture basis.
MILL CHAR	5 = Normal. 4 = Normal-soft. 3 = Soft - normal. 2 = Soft. 1 = Gritty. 0 = Very Soft.
MIX PAT	Refer to reference mixographs for numerical curve pattern. (1 = Very weak --- 11 = Very strong.)
DOUGH CHAR	9 = Elastic. 7 = Slightly Pliable. 5 = Very pliable. 4 = Bucky. 2 = Very, very pliable. 0 = Dead.
CRUMB COLOR	10.0 = Bright, white 8.0 = Soft, slightly creamy 6.0 = Creamy 4.0 = Very creamy 2.0 = Dull, very gray
CRUMB GRAIN	10.0 = Close, elongated, and uniform cells; fine grain and thin walls; soft texture. 8.0 = Slightly open, elongated cells; fine grain and thin walls; soft texture. 6.0 = Open elongated to round cells; fine grain and thick walls; slightly coarse texture. 4.0 = Open elongated to round; coarse grain and thick walls; coarse to rough texture. 2.0 = Irregular open and large cells, coarse grain and thick walls; rough or soggy texture.

STANDARD MIXOGRAPH PATTERNS



QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 1 STATE=NORTH DAKOTA STATION=LANGDON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		54.3	23.3	21	4	1.98	16.0	63	3	64.3	0.51	14.5	5	4	57.6	2
CHRIS		54.8	21.9	11	7	1.87	15.9	70	3	66.0	0.38	15.3	5	4	58.6	2
ERA	S	52.1	20.4	27	13	1.96	15.1	56	3	66.6	0.45	13.4	5	4	55.8	2
STOA	S	53.4	24.4	14	6	2.07	16.2	83	3	64.5	0.42	15.3	5	4	60.3	3
BUTTE86	S	53.0	23.6	17	6	2.03	15.7	62	3	64.2	0.43	14.3	5	4	60.0	3
SD8072		52.9	23.5	11	6	2.08	15.6	58	3	64.1	0.44	14.6	5	4	58.2	3
SD8073		51.4	21.9	8	9	2.20	15.6	57	3	60.4	0.52	14.4	5	2	59.3	4
SD8070		56.2	25.3	23	5	1.98	15.1	78	3	66.2	0.42	13.9	5	4	60.8	3
SD0005		53.0	24.4	24	5	1.90	14.8	55	3	68.8	0.37	13.4	5	4	60.5	3
SD0010		52.6	23.1	11	8	1.92	15.0	68	3	66.1	0.37	13.3	5	4	59.6	3
MN89103		52.2	22.6	29	11	1.96	15.7	74	3	65.6	0.41	14.5	5	4	59.6	2
MN90071		53.8	25.6	29	3	1.97	15.8	67	3	65.6	0.44	14.5	5	4	60.8	3
MN90114		49.8	22.4	12	9	2.11	15.6	79	3	61.1	0.55	13.6	5	3	58.6	1
MN90253		53.0	27.0	24	5	2.09	14.0	44	3	62.3	0.45	12.7	5	2	57.9	3
SBE0437		53.0	23.4	16	7	1.95	15.2	55	3	67.0	0.39	14.0	5	4	59.0	3
SBE0444		53.1	24.8	22	6	1.96	14.8	47	3	65.3	0.42	13.3	5	4	57.9	2
ND671		56.3	26.2	27	4	1.92	15.6	60	3	65.1	0.40	15.0	5	4	59.3	2
ND673		54.1	25.3	25	5	2.02	15.9	73	3	64.5	0.40	14.7	5	4	59.0	3
ND674		53.8	22.3	19	7	2.05	16.7	69	3	63.7	0.42	15.6	5	4	57.9	4
ND677		53.0	22.8	9	10	2.02	15.8	50	3	62.3	0.38	14.6	5	3	58.2	3
ND678		56.3	26.2	18	7	1.83	15.4	71	3	65.8	0.40	13.8	5	4	60.8	3
XW398A4		51.5	23.7	14	8	2.10	15.6	57	3	62.6	0.49	14.4	5	3	63.1	4
N86-0348		50.5	21.7	22	7	2.12	15.9	56	3	60.9	0.51	14.3	5	2	60.0	3
N90-0666		52.6	24.9	29	3	1.96	15.1	67	3	65.3	0.47	13.8	5	4	59.3	3
N90-0671		53.5	26.7	43	3	1.88	14.6	68	3	66.5	0.40	12.9	5	3	56.9	3
N90-0700		49.8	17.7	3	20	1.92	15.4	68	2	60.7	0.43	14.2	5	2	59.0	3
N88-3140		50.2	22.9	18	5	2.16	17.8	56	3	59.6	0.44	17.0	5	2	60.5	3
MT8849		49.5	25.2	26	5	2.02	16.0	61	3	63.0	0.46	14.7	5	4	58.2	2
BW152		54.4	25.0	18	4	1.88	16.4	73	3	66.2	0.41	15.4	5	4	57.3	2
8601AE3C		54.3	28.0	47	3	1.83	16.6	78	3	65.2	0.51	15.0	5	4	60.8	2
BZ988-351		47.0	17.3	5	22	2.07	16.4	73	1	57.9	0.45	15.2	5	2	57.6	2
BZ984-334		48.3	22.4	13	13	2.20	16.1	47	3	59.6	0.49	14.9	5	2	57.6	2

TABLE 1 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=LANGDON NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES														
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		57.6	3.00	9	8.0	7.5	200	2	3.0	MJ								MI	MJ				MI	
CHRIS		58.6	3.00	9	8.0	7.5	205	2	3.0	MJ								MI	MJ				MI	
ERA	S	55.8	3.50	9	8.0	8.0	209	2	3.0	MJ	MI	MI						MI	MJ					
STOA	S	60.3	4.00	9	8.0	8.0	207	2	3.0	MJ									MJ					
BUTTE86	S	60.0	3.00	9	8.0	7.5	211	2	3.0	MJ									MJ				MI	
SD8072		58.2	4.00	9	7.5	8.0	195	2	3.0	MJ									MJ			MI		
SD8073		59.3	5.00	9	7.0	7.5	197	2	2.3	MJ		MI		MJ					MJ			MI	MI	
SD8070		60.8	3.00	9	8.0	7.5	204	3	3.3	MJ									MI				MI	
SD0005		60.5	4.00	9	8.0	8.5	205	3	3.3	MJ									MI					
SD0010		59.6	4.50	9	8.0	7.0	203	2	3.0	MJ		MI							MJ				MI	
MN89103		59.6	3.00	9	8.0	8.0	201	2	3.0	MJ		MI						MI	MJ					
MN90071		60.8	3.25	9	8.0	8.0	212	3	3.3	MJ									MI					
MN90114		58.6	3.00	5	8.0	7.0	201	1	2.3	MJ		MI		MI				MJ	MJ		MI		MI	
MN90253		57.9	4.50	9	8.0	8.0	216	2	2.3	MJ				MI		MI			MJ					
SBE0437		59.0	4.50	9	8.0	7.5	200	2	3.0	MJ									MJ				MI	
SBE0444		57.9	3.25	9	8.0	7.5	210	2	3.0	MJ								MI	MJ				MI	
ND671		59.3	3.00	9	8.0	8.0	205	2	3.0	MJ								MI	MJ					
ND673		59.0	4.50	9	8.0	8.0	201	2	3.0	MJ									MJ					
ND674		57.9	5.50	9	7.5	8.0	222	2	3.0	MJ									MJ			MI		
ND677		58.2	3.75	9	8.0	7.5	206	2	2.7	MJ		MI		MI					MJ				MI	
ND678		60.8	3.00	7	8.0	8.0	203	3	3.3	MJ									MI					
XW398A4		63.1	3.50	9	7.5	7.5	230	4	3.3	MJ		MI		MI								MI	MI	
N86-0348		60.0	3.00	5	7.5	7.5	203	2	2.3	MJ				MJ					MJ		MI	MI	MI	
N90-0666		59.3	3.75	9	7.0	7.5	224	2	3.0	MJ									MJ			MI	MI	
N90-0671		56.9	5.00	7	8.0	8.0	197	2	2.7	MJ						MI			MJ					
N90-0700		59.0	4.00	9	7.5	8.0	210	2	2.0	MJ	MI	MJ		MJ					MJ			MI		
N88-3140		60.5	3.00	9	7.5	8.0	222	3	2.7	MJ				MJ					MI			MI		
MT8849		58.2	5.00	9	7.5	8.0	217	2	3.0	MJ								MI	MJ			MI		
BW152		57.3	3.50	9	7.5	7.5	210	2	3.0	MJ								MI	MJ			MI	MI	
8601AE3C		60.8	3.00	9	7.5	8.0	232	3	3.3	MJ								MI	MI			MI		
BZ988-351		57.6	4.00	9	7.0	7.5	190	2	1.7	MJ	MJ	MJ		MJ				MI	MJ			MI	MI	
BZ984-334		57.6	4.00	9	8.0	8.0	192	2	2.3	MJ		MI		MJ				MI	MJ					

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	20.7	8	13.9	63.0	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	188
MAJOR FAULTING VALUES	56.9	17.7	18	12.9	61.0	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	178

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 2 STATE=NORTH DAKOTA STATION=MINOT NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		60.5	29.2	34	2	1.65	13.6	72	3	68.2	0.39	13.1	5	3	56.2	2
CHRIS		60.8	28.1	29	1	1.52	14.1	73	4	70.6	0.35	13.8	5	4	61.1	3
ERA	S	60.3	29.8	38	2	1.54	12.8	77	2	72.2	0.36	11.7	5	2	57.6	2
STOA	S	60.2	32.7	43	1	1.59	14.6	74	4	69.4	0.34	14.2	5	4	60.3	3
BUTTE86	S	60.4	36.4	61	1	1.57	14.9	83	4	69.5	0.35	13.5	5	4	59.3	2
SD8072		62.0	35.0	64	0	1.62	14.3	82	4	71.5	0.38	13.5	5	4	57.9	2
SD8073		61.3	34.8	62	1	1.58	14.1	87	4	71.6	0.38	13.4	5	4	60.0	3
SD8070		62.0	34.7	31	1	1.52	14.0	75	4	71.1	0.34	13.0	5	4	57.9	2
SD0005		60.3	40.8	80	0	1.48	14.3	82	4	72.8	0.30	13.3	5	4	57.6	2
SD0010		60.5	35.2	54	1	1.57	14.8	75	4	70.4	0.31	13.8	5	4	59.0	3
MN89103		60.4	32.7	32	2	1.41	14.3	90	4	70.4	0.31	13.5	5	4	57.9	2
MN90071		61.6	39.1	75	0	1.54	14.4	81	4	71.6	0.33	13.9	5	4	59.6	3
MN90114		60.9	37.5	71	0	1.53	14.2	93	4	69.9	0.37	12.4	5	2	58.6	2
MN90253		60.2	39.7	65	1	1.59	13.5	65	3	70.4	0.33	13.2	5	4	58.2	2
SBE0437		60.1	39.7	79	1	1.51	14.1	75	4	71.9	0.32	13.0	5	4	58.2	2
SBE0444		60.9	37.6	69	1	1.54	13.6	61	3	72.1	0.33	13.1	5	4	55.8	2
ND671		62.0	35.5	62	0	1.55	15.0	83	4	69.9	0.33	15.0	5	4	59.6	2
ND673		61.6	38.8	74	0	1.57	15.2	81	4	70.9	0.34	14.7	5	4	60.8	5
ND674		61.8	36.0	73	1	1.62	16.2	83	4	71.1	0.34	15.5	5	4	60.8	5
ND677		62.5	37.0	71	1	1.58	14.7	64	4	70.8	0.33	14.2	5	4	59.6	3
ND678		61.6	33.1	46	1	1.52	15.4	93	4	70.2	0.31	14.1	5	4	61.4	3
XW398A4		61.8	40.0	75	0	1.63	14.2	66	4	71.3	0.38	13.8	5	4	60.0	3
N86-0348		60.9	35.5	65	1	1.63	14.7	75	4	70.2	0.36	14.0	5	4	59.3	2
N90-0666		60.4	36.8	76	0	1.60	14.8	79	4	71.0	0.35	13.8	5	4	59.3	3
N90-0671		60.8	35.2	74	0	1.52	13.6	79	3	71.1	0.34	13.1	5	4	55.3	2
N90-0700		60.2	29.1	29	2	1.48	14.4	77	4	68.9	0.31	13.8	5	4	57.9	3
N88-3140		60.3	37.0	74	0	1.66	15.5	83	4	69.0	0.32	15.5	5	4	58.6	2
MT8849		60.6	36.8	62	1	1.62	14.2	75	4	69.7	0.36	13.3	5	4	56.5	3
BW152		62.0	35.2	57	1	1.61	15.8	104	4	70.1	0.34	15.2	5	4	57.6	1
8601AE3C		62.0	32.5	44	1	1.59	14.5	68	4	70.7	0.36	14.2	5	4	57.3	2
BZ988-351		58.2	29.8	26	3	1.62	15.2	64	4	66.7	0.31	14.5	5	3	56.9	2
BZ984-334		56.8	33.1	40	1	1.67	14.8	51	3	67.2	0.35	15.0	5	3	56.5	3

TABLE 2 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=MINOT NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES														
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		56.2	3.25	7	8.0	8.0	181	2	2.7		MI		MI	MI				MI	MJ					
CHRIS		61.1	3.00	9	8.0	8.0	182	3	3.7		MI								MI					
ERA	S	57.6	3.75	7	8.0	8.0	187	2	2.0		MI		MJ			MJ		MI	MJ					
STOA	S	60.3	4.00	9	8.0	8.0	191	2	3.3										MJ					
BUTTE86	S	59.3	3.00	9	8.0	8.0	190	2	3.3									MI	MJ					
SD8072		57.9	3.50	7	8.0	8.0	185	2	3.3									MI	MJ					
SD8073		60.0	3.75	7	7.5	8.0	178	2	3.3										MJ			MI		
SD8070		57.9	4.00	7	8.0	8.0	182	2	3.3									MI	MJ					
SD0005		57.6	3.25	7	8.0	8.5	178	2	3.3									MI	MJ					
SD0010		59.0	4.00	9	8.0	8.0	182	2	3.3										MJ					
MN89103		57.9	3.25	5	7.5	8.0	170	2	3.3									MI	MJ		MI	MI		
MN90071		59.6	3.50	9	8.0	7.5	187	2	3.3										MJ				MI	
MN90114		58.6	3.50	7	8.0	8.0	180	2	2.7							MJ		MI	MJ					
MN90253		58.2	4.50	7	8.0	8.0	177	2	3.0				MI					MI	MJ					
SBE0437		58.2	4.00	7	8.0	8.0	190	2	3.3									MI	MJ					
SBE0444		55.8	4.00	5	8.0	8.0	169	2	3.0				MI					MI	MJ		MI			
ND671		59.6	3.50	9	8.5	7.5	187	2	3.3									MI	MJ				MI	
ND673		60.8	4.50	9	8.0	8.0	187	3	3.7										MI					
ND674		60.8	5.25	9	8.0	8.0	190	3	3.7										MI					
ND677		59.6	4.00	9	8.0	8.0	193	2	3.3										MJ					
ND678		61.4	3.50	9	8.5	8.0	191	3	3.7										MI					
XW398A4		60.0	4.00	9	8.0	8.0	190	2	3.3										MJ					
N86-0348		59.3	3.25	9	8.0	8.0	180	2	3.3									MI	MJ					
N90-0666		59.3	4.50	9	7.0	8.0	170	2	3.3										MJ			MI		
N90-0671		55.3	6.00	4	8.0	8.0	173	1	2.7				MI					MI	MJ	MI	MJ			
N90-0700		57.9	4.75	9	8.0	8.0	180	2	3.3		MI								MJ					
N88-3140		58.6	3.00	9	8.0	8.0	187	2	3.3									MI	MJ					
MT8849		56.5	8.00	4	8.0	7.5	179	1	3.0										MJ	MI	MJ		MI	
BW152		57.6	3.00	9	8.0	8.0	184	1	3.0									MJ	MJ					
8601AE3C		57.3	4.50	9	8.0	8.0	192	2	3.3									MI	MJ					
BZ988-351		56.9	5.50	9	8.0	8.0	171	2	3.0		MI			MI				MI	MJ					
BZ984-334		56.5	6.50	9	8.5	7.5	187	1	2.3	MJ				MI					MJ	MI				MI

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	30.9	8	13.9	68.3	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	168
MAJOR FAULTING VALUES	56.9	27.9	18	12.9	66.3	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	158

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 3 STATE=NORTH DAKOTA STATION=CARRINGTON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		54.6	21.2	10	7	1.95	16.1	64	3	64.5	0.42	15.1	5	4	57.9	2
CHRIS		55.4	21.5	10	7	1.76	15.5	62	3	66.9	0.36	14.6	5	4	60.3	2
ERA	S	49.1	18.2	8	15	1.97	15.1	58	3	64.7	0.47	13.9	5	4	57.6	2
STOA	S	51.6	20.5	6	11	1.95	15.8	63	3	63.5	0.40	15.3	5	4	58.6	3
BUTTE86	S	54.3	29.2	33	3	1.80	15.3	74	3	64.9	0.38	13.8	5	4	56.5	2
SD8072		52.2	23.0	18	5	1.97	15.8	63	3	64.8	0.41	15.0	5	4	56.5	2
SD8073		52.0	22.8	14	6	2.02	15.4	79	3	63.3	0.44	14.5	5	4	58.2	4
SD8070		55.8	27.6	32	4	1.74	14.2	66	3	66.7	0.36	12.7	5	3	55.5	2
SD0005		55.5	24.9	27	5	1.65	13.2	65	2	69.1	0.31	11.9	5	2	54.6	2
SD0010		51.3	22.5	10	7	1.82	14.8	60	3	66.6	0.33	13.2	5	4	55.5	2
MN89103		52.6	21.2	31	14	1.81	15.1	82	3	66.7	0.33	13.9	5	4	56.2	2
MN90071		56.1	29.2	17	3	1.74	14.5	65	3	67.4	0.37	13.2	5	4	56.5	2
MN90114		54.6	26.0	30	5	1.81	14.3	75	3	63.6	0.45	12.3	5	2	53.2	1
MN90253		52.8	27.0	23	7	1.91	13.7	45	2	61.9	0.39	12.9	5	2	53.2	2
SBE0437		54.6	24.4	21	6	1.75	14.4	59	3	66.0	0.33	13.0	5	4	54.3	1
SBE0444		53.4	24.5	26	7	1.79	14.2	45	3	65.7	0.36	12.9	5	3	53.5	1
ND671		55.7	24.3	18	6	1.82	15.4	67	3	65.1	0.35	15.0	5	4	58.2	2
ND673		55.9	27.3	34	4	1.84	15.2	59	3	66.6	0.36	14.2	5	4	55.8	3
ND674		57.4	25.4	38	3	1.76	15.7	66	4	67.4	0.36	14.9	5	4	56.5	4
ND677		55.9	23.8	13	8	1.78	14.4	53	3	66.1	0.34	13.6	5	4	55.0	2
ND678		57.8	24.6	16	6	1.71	15.0	78	4	65.8	0.36	13.3	5	4	56.5	2
XW398A4		52.2	23.1	16	10	1.96	14.8	54	3	62.6	0.45	13.9	5	4	55.8	2
N86-0348		52.1	20.9	18	10	1.90	14.8	60	3	62.1	0.48	13.6	5	3	53.8	2
N90-0666		55.4	27.6	40	3	1.70	14.3	66	3	67.3	0.38	13.0	5	4	53.2	1
N90-0671		56.2	27.2	42	3	1.68	13.3	69	2	67.8	0.35	11.9	5	2	50.8	1
N90-0700		49.1	17.5	4	20	1.74	14.9	66	1	61.5	0.41	13.7	5	3	55.5	2
N88-3140		51.5	22.1	17	6	2.00	17.2	57	3	60.9	0.39	16.2	5	3	57.9	2
MT8849		50.9	21.9	14	10	1.88	14.5	61	3	65.0	0.43	13.5	5	4	54.6	1
BW152		55.5	26.8	29	3	1.77	16.2	69	3	65.7	0.41	14.7	5	4	53.8	1
8601AE3C		57.6	25.3	28	5	1.68	15.2	62	4	62.0	0.41	14.2	5	3	55.0	1
BZ988-351		45.1	15.1	3	29	1.92	16.4	42	1	65.1	0.37	15.6	5	4	55.8	2
BZ984-334		45.0	18.4	7	16	2.23	17.0	46	2	56.0	0.47	16.5	5	2	56.5	2

TABLE 3 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=CARRINGTON NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES														
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		57.9	3.00	9	7.5	7.5	195	2	3.0	MJ								MI	MJ			MI	MI	
CHRIS		60.3	2.50	9	7.0	8.0	190	1	2.7	MJ								MI	MJ	MI		MI		
ERA	S	57.6	3.50	9	8.0	8.0	219	2	3.0	MJ	MI	MI						MI	MJ					
STOA	S	58.6	4.25	9	8.0	8.0	201	2	3.0	MJ	MI	MI							MJ					
BUTTE86	S	56.5	3.50	9	8.0	8.0	189	2	3.0	MJ								MI	MJ					
SD8072		56.5	4.50	9	7.5	7.5	193	2	3.0	MJ								MI	MJ			MI	MI	
SD8073		58.2	5.25	9	8.0	8.0	193	2	3.0	MJ									MJ					
SD8070		55.5	3.75	9	8.0	8.0	195	2	2.7	MJ						MI		MI	MJ					
SD0005		54.6	4.25	9	8.0	7.5	191	2	2.0	MJ			MI			MJ		MI	MJ				MI	
SD0010		55.5	4.75	9	8.0	7.5	198	2	3.0	MJ								MI	MJ				MI	
MN89103		56.2	3.50	9	6.5	7.5	193	2	3.0	MJ		MI							MJ			MI	MI	
MN90071		56.5	3.50	9	8.0	8.0	200	2	3.0	MJ								MI	MJ					
MN90114		53.2	3.50	5	8.0	8.0	170	1	2.0	MJ						MJ		MJ	MJ		MI			MJ
MN90253		53.2	6.50	9	8.0	8.5	189	1	1.7	MJ			MI	MI		MI		MI	MJ	MI				
SBE0437		54.3	5.00	7	8.0	8.5	182	1	2.7	MJ								MJ	MJ					MI
SBE0444		53.5	5.00	7	7.5	8.0	180	1	2.3	MJ						MI		MJ	MJ			MI		MI
ND671		58.2	3.00	9	8.0	7.5	215	2	3.0	MJ								MI	MJ				MI	
ND673		55.8	5.00	7	7.5	8.0	188	2	3.0	MJ									MJ			MI		
ND674		56.5	5.50	9	8.0	7.5	192	2	3.3	MI									MJ				MI	
ND677		55.0	5.00	9	8.0	8.5	193	2	3.0	MJ		MI						MI	MJ					
ND678		56.5	3.50	9	8.0	8.0	190	2	3.3	MI								MI	MJ					
XW398A4		55.8	4.00	9	8.0	8.0	186	2	3.0	MJ		MI						MI	MJ					
N86-0348		53.8	4.25	5	7.5	8.0	185	2	2.7	MJ		MI		MI				MI	MJ		MI	MI		
N90-0666		53.2	4.50	7	7.0	8.0	173	1	2.7	MJ								MJ	MJ			MI		MI
N90-0671		54.6	6.00	2	7.0	8.0	160	1	1.7	MJ			MI			MJ		MJ	MJ	MI	MJ	MI		MJ
N90-0700		55.5	5.00	9	8.0	7.5	192	2	2.0	MJ	MJ	MJ		MI				MI	MJ				MI	
N88-3140		57.9	3.00	9	8.0	7.5	201	2	2.7	MJ				MI				MI	MJ				MI	
MT8849		54.6	5.75	2	7.5	8.0	188	1	2.7	MJ		MI						MJ	MJ	MI	MJ	MI		
BW152		53.8	3.00	5	8.0	8.0	187	1	2.7	MJ								MJ	MJ		MI			
8601AE3C		55.0	4.00	7	8.0	7.5	204	1	2.7	MI				MI				MJ	MJ				MI	
BZ988-351		55.8	4.50	7	7.5	8.0	192	2	2.3	MJ	MJ	MJ						MI	MJ			MI		
BZ984-334		56.5	5.00	9	7.5	8.0	204	2	2.0	MJ	MI	MJ		MJ				MI	MJ			MI		

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	20.5	8	13.9	62.3	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	182
MAJOR FAULTING VALUES	56.9	17.5	18	12.9	60.3	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	172

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 4 STATE=SOUTH DAKOTA STATION=SELBY NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		57.0	23.1	10	6	1.74	13.2	69	3	68.6	0.38	12.0	5	2	53.8	2
CHRIS	S	59.1	24.6	17	6	1.69	13.8	71	3	67.4	0.37	12.7	5	3	56.2	1
ERA	S	56.6	23.0	12	8	1.79	13.0	71	2	67.3	0.43	11.6	5	2	55.0	2
STOA	S	56.8	25.4	8	4	1.87	13.9	65	2	66.9	0.38	13.2	5	4	57.6	3
BUTTE86		58.4	32.3	36	2	1.75	13.6	74	3	67.9	0.38	11.9	5	2	57.3	2
SD8072		57.0	28.7	26	3	1.85	13.4	66	3	68.2	0.40	12.2	5	2	55.0	3
SD8073		57.4	29.4	30	3	1.83	13.5	79	3	67.2	0.41	12.5	5	3	57.6	3
SD8070		57.5	28.0	18	5	1.84	13.0	69	3	66.7	0.39	11.8	5	2	55.0	2
SD0005		59.5	30.6	45	2	1.67	12.1	66	2	70.6	0.35	10.4	5	2	55.3	2
SD0010		56.9	27.0	21	4	1.80	13.3	69	2	69.3	0.38	11.8	5	2	57.3	2
MN89103		55.9	23.5	6	12	1.77	13.2	70	2	66.9	0.37	11.9	5	2	55.3	1
MN90071		58.0	30.9	33	3	1.76	12.9	73	2	69.5	0.36	11.7	5	2	57.6	2
MN90114		58.0	27.5	27	3	1.76	12.9	83	2	66.5	0.44	10.7	5	2	56.2	1
MN90253		56.5	30.4	26	4	1.87	12.5	49	1	65.2	0.38	11.7	5	2	55.5	3
SBE0437		59.0	31.1	44	2	1.70	12.8	67	2	70.0	0.35	11.2	5	2	60.0	3
SBE0444		57.8	30.9	34	4	1.76	13.2	54	3	68.5	0.37	12.0	5	2	59.6	3
ND671		58.9	26.7	22	4	1.76	13.3	58	3	66.5	0.36	12.5	5	3	60.0	3
ND673		58.0	28.7	31	4	1.77	13.3	68	3	66.0	0.38	11.8	5	2	59.0	4
ND674		60.4	29.6	41	2	1.82	14.0	80	4	68.4	0.38	13.2	5	4	60.0	4
ND677		57.3	25.8	11	6	1.88	13.6	60	3	65.8	0.41	12.6	5	3	58.2	3
ND678		61.8	30.2	29	3	1.70	13.5	80	3	69.5	0.35	11.6	5	2	58.6	2
XW398A4		57.0	30.9	28	5	1.92	13.4	57	3	66.2	0.45	12.5	5	3	60.3	3
N86-0348		55.6	25.7	22	6	1.89	13.7	65	2	64.1	0.46	12.4	5	1	57.6	2
N90-0666		59.1	30.6	50	2	1.72	13.3	71	3	68.6	0.39	12.1	5	2	58.6	3
N90-0671		58.2	29.5	44	3	1.65	12.6	83	2	68.4	0.40	11.2	5	2	55.3	2
N90-0700		55.3	22.3	5	9	1.66	13.4	69	2	65.8	0.37	12.5	5	3	57.6	3
N88-3140		55.1	27.2	22	3	1.98	15.5	62	3	63.3	0.41	14.7	5	3	59.3	3
MT8849		55.6	27.2	20	5	1.90	13.9	67	2	64.0	0.43	12.7	5	2	60.0	4
BW152		57.3	27.5	27	2	1.78	14.3	82	4	67.4	0.39	13.4	5	4	57.9	3
8601AE3C		59.3	27.3	24	4	1.82	15.0	69	4	67.0	0.44	13.8	5	4	60.5	3
BZ988-351		51.9	18.8	4	22	1.95	15.2	50	1	60.2	0.42	14.5	5	2	60.3	3
BZ984-334		50.7	23.4	11	14	2.00	14.5	51	3	60.7	0.46	13.7	5	2	59.0	3

TABLE 4 COND

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=SOUTH DAKOTA STATION=SELBY NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES														
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		53.8	4.25	7	8.0	7.5	193	2	2.3	MI			MI			MJ		MI	MJ				MI	
CHRIS	S	56.2	3.50	7	8.0	7.5	195	1	2.3				MI			MI		MJ	MJ				MI	
ERA	S	55.0	4.50	9	8.0	8.0	204	2	2.0	MJ		MI	MI			MJ		MI	MJ					
STOA	S	57.6	5.00	9	8.0	8.0	200	2	2.7	MJ			MI						MJ					
BUTTE86		57.3	3.50	7	7.5	8.0	193	2	2.3				MI			MJ		MI	MJ			MI		
SD8072		55.0	5.00	7	8.0	7.5	191	2	2.3	MI			MI			MJ			MJ				MI	
SD8073		57.6	5.50	9	7.0	8.0	202	2	2.7	MI			MI			MI			MJ			MI		
SD8070		55.0	4.50	9	7.5	8.0	205	2	2.3	MI			MI			MJ		MI	MJ			MI		
SD0005		55.3	4.25	9	8.0	8.0	208	2	2.0				MJ			MJ		MI	MJ					
SD0010		57.3	5.00	9	7.5	7.5	210	2	2.0	MJ			MI			MJ		MI	MJ			MI	MI	
MN89103		55.3	3.25	9	7.0	7.5	206	1	1.7	MJ		MI	MI			MJ		MJ	MJ			MI	MI	
MN90071		57.6	4.50	9	8.0	8.0	207	2	2.0				MJ			MJ		MI	MJ					
MN90114		56.2	3.50	9	8.0	8.0	201	1	1.7				MJ			MJ		MJ	MJ					
MN90253		55.5	6.00	9	8.0	7.5	206	1	1.3	MJ			MJ			MJ			MJ	MI			MI	
SBE0437		60.0	4.50	9	8.0	7.5	216	2	2.0				MJ			MJ			MJ				MI	
SBE0444		59.6	4.50	9	8.0	7.5	218	2	2.3	MI			MI			MJ			MJ				MI	
ND671		60.0	4.00	9	8.0	8.0	215	2	2.7				MI			MI			MJ					
ND673		59.0	6.00	9	8.0	7.5	205	1	2.0				MI			MJ			MJ	MI			MI	
ND674		60.0	6.00	9	7.5	7.5	220	1	3.0										MJ	MI		MI	MI	
ND677		58.2	4.25	9	8.0	8.0	216	2	2.7	MI			MI			MI			MJ					
ND678		58.6	3.50	9	8.5	8.0	194	2	2.3				MI			MJ		MI	MJ					
XW398A4		60.3	4.00	9	7.5	8.0	240	2	2.7	MI			MI			MI			MJ			MI		
N86-0348		57.6	3.50	7	7.5	7.5	205	2	1.7	MJ			MI	MI		MJ		MI	MJ			MI	MI	
N90-0666		58.6	4.25	9	7.0	7.5	210	2	2.3				MI			MJ			MJ			MI	MI	
N90-0671		55.3	5.50	9	7.5	8.0	187	2	2.0				MJ			MJ		MI	MJ			MI		
N90-0700		57.6	4.50	9	7.5	8.0	200	2	2.3	MJ		MI	MI			MI			MJ			MI		
N88-3140		59.3	3.50	9	8.0	8.0	210	2	2.7	MJ				MI					MJ					
MT8849		60.0	6.00	9	8.0	8.5	209	1	1.7	MJ			MI	MI		MI			MJ	MI				
BW152		57.9	3.50	9	7.5	8.0	202	2	3.3	MI									MJ			MI		
8601AE3C		60.5	3.25	9	7.5	8.0	212	3	3.7										MI			MI		
BZ988-351		60.3	4.00	9	7.5	7.5	183	2	1.7	MJ	MJ	MJ		MJ					MJ			MI	MI	
BZ984-334		59.0	4.75	9	8.0	8.0	191	2	2.3	MJ		MI		MJ					MJ					

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	22.2	8	13.9	65.1	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	179
MAJOR FAULTING VALUES	56.9	19.2	18	12.9	63.1	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	169

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 5 STATE=SOUTH DAKOTA STATION=BROOKINGS NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		55.0	16.4	2	20	1.84	13.3	73	1	65.7	0.45	11.8	5	2	53.8	2
CHRIS		58.0	22.6	15	10	1.75	14.2	78	4	67.6	0.37	12.9	5	3	58.2	3
ERA	S	53.0	18.3	7	16	1.92	14.3	64	2	61.5	0.47	12.6	5	2	52.9	2
STOA	S	55.2	22.8	9	13	1.91	14.6	81	3	64.0	0.42	13.4	5	4	58.2	3
BUTTE86	S	57.1	27.9	38	4	1.78	13.8	71	3	65.5	0.41	12.0	5	2	57.6	2
SD8072		56.7	24.9	32	7	1.88	13.4	71	2	65.4	0.43	11.7	5	2	58.6	4
SD8073		55.7	26.2	30	5	1.90	13.7	63	2	63.6	0.43	12.1	5	2	60.3	5
SD8070		56.3	25.3	27	8	1.89	13.9	69	2	63.2	0.44	11.8	5	2	57.6	3
SD0005		56.5	25.3	38	8	1.80	13.2	62	2	66.5	0.36	11.4	5	2	57.6	2
SD0010		55.7	23.9	19	9	1.83	14.0	76	3	65.1	0.37	12.0	5	2	57.6	3
MN89103		56.7	24.2	13	12	1.72	13.8	68	2	64.6	0.32	12.3	5	2	56.5	3
MN90071		55.5	26.4	29	7	1.82	14.1	74	3	65.7	0.40	12.2	5	2	58.2	3
MN90114		54.6	24.8	26	7	1.92	14.5	85	3	61.3	0.55	12.5	5	2	58.2	2
MN90253		55.7	27.5	30	7	1.92	13.3	60	2	63.9	0.43	11.6	5	2	56.2	3
SBE0437		58.0	27.2	46	4	1.74	13.4	64	3	67.9	0.33	11.5	5	2	56.9	3
SBE0444		54.9	24.0	31	8	1.91	13.8	61	2	64.4	0.40	12.6	5	3	56.5	2
ND671		56.2	22.9	16	10	1.92	14.8	62	3	63.0	0.44	13.5	5	4	59.0	3
ND673		56.6	26.6	34	5	1.85	14.2	74	3	63.8	0.39	12.7	5	3	57.9	4
ND674		58.2	25.1	37	5	1.82	15.0	67	4	63.1	0.41	14.1	5	4	57.3	4
ND677		55.4	22.2	12	12	1.89	14.0	56	3	64.8	0.41	12.6	5	3	56.2	3
ND678		57.4	23.8	13	12	1.84	14.6	70	4	63.7	0.44	12.6	5	3	59.0	3
XW398A4		51.6	22.7	17	12	2.06	14.8	56	3	61.0	0.53	13.4	5	3	61.4	4
N86-0348		54.2	21.2	20	10	1.98	14.8	61	3	61.4	0.52	13.4	5	3	59.0	3
N90-0666		56.9	27.9	48	3	1.77	14.4	78	3	65.9	0.38	12.8	5	3	57.6	3
N90-0671		55.1	25.4	43	5	1.79	13.3	62	2	65.0	0.42	11.6	5	2	54.6	2
N90-0700		54.6	19.5	9	16	1.77	14.5	79	2	61.6	0.42	12.7	5	3	57.9	3
N88-3140		53.3	22.4	22	8	2.05	15.7	55	3	60.0	0.43	14.8	5	3	58.6	3
MT8849		47.5	16.6	3	28	2.11	14.1	65	1	59.3	0.54	12.5	5	1	55.5	3
BW152		57.0	27.0	33	6	1.84	15.1	72	4	63.5	0.47	13.2	5	4	56.5	2
8601AE3C		56.6	20.1	28	13	1.91	15.1	78	3	64.2	0.44	13.6	5	4	59.0	3
BZ988-351		47.5	15.0	2	39	2.08	15.5	46	1	56.0	0.46	14.7	5	2	59.0	3
BZ984-334		46.5	18.2	10	23	2.12	15.5	56	2	56.7	0.54	14.0	5	2	56.2	3

TABLE 5 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=SOUTH DAKOTA STATION=BROOKINGS NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES														
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		57.9	4.00	7	8.0	8.0	183	1	1.3	MJ	MJ	MJ	MI			MJ		MI	MJ					MI
CHRIS		58.2	3.50	9	8.0	8.5	213	2	3.0			MI				MI			MJ					
ERA	S	56.7	5.00	9	8.0	8.5	206	2	2.0	MJ	MI	MJ		MI		MI		MI	MJ					
STOA	S	58.2	5.00	9	8.0	7.5	209	2	3.0	MJ		MI							MJ				MI	
BUTTE86	S	57.6	3.50	9	8.0	8.0	200	2	2.3	MI			MI			MJ		MI	MJ					
SD8072		58.6	5.00	9	8.0	7.5	202	2	2.0	MJ			MI			MJ			MJ				MI	
SD8073		60.3	5.50	9	7.5	8.0	200	2	2.0	MJ			MI			MJ			MJ			MI		
SD8070		57.6	5.00	9	8.0	8.0	210	2	2.0	MJ		MI	MI			MJ			MJ					
SD0005		57.6	4.25	9	8.0	8.0	208	2	2.0	MJ		MI	MI			MJ		MI	MJ					
SD0010		57.6	5.75	9	8.0	7.5	200	1	2.0	MJ		MI				MJ			MJ	MI			MI	
MN89103		56.5	4.50	9	7.0	7.5	201	2	2.0	MJ		MI	MI			MJ			MJ			MI	MI	
MN90071		58.2	4.25	9	8.0	8.0	213	2	2.3	MJ						MJ			MJ					
MN90114		62.3	3.50	7	8.0	8.0	196	4	3.0	MJ				MI		MI		MI						
MN90253		56.2	6.00	7	8.0	8.0	197	1	1.7	MJ			MI			MJ			MJ	MI				
SBE0437		56.9	4.00	9	8.0	8.0	202	2	2.3				MI			MJ			MJ					
SBE0444		56.5	3.50	9	7.5	8.0	187	2	2.3	MJ		MI	MI			MI		MI	MJ			MI		
ND671		59.0	4.50	9	8.0	7.5	220	2	3.0	MJ		MI							MJ				MI	
ND673		57.9	5.25	9	8.0	8.0	192	2	2.7	MJ						MI			MJ					
ND674		57.3	6.00	9	8.0	8.0	213	1	3.0										MJ	MI				
ND677		56.2	5.00	9	8.0	8.0	209	2	2.7	MJ		MI				MI			MJ					
ND678		59.0	3.50	9	8.5	7.5	206	2	3.0	MI		MI				MI			MJ				MI	
XW398A4		61.4	4.50	9	7.5	7.5	233	3	3.0	MJ		MI		MI					MI			MI	MI	
N86-0348		59.0	4.25	9	7.5	8.0	202	2	2.7	MJ		MI		MI					MJ			MI		
N90-0666		57.6	4.50	9	7.0	7.5	195	2	2.7	MJ						MI			MJ			MI	MI	
N90-0671		54.6	6.00	7	7.0	7.5	186	1	1.7	MJ			MI			MJ		MI	MJ	MI		MI	MI	
N90-0700		57.9	5.25	9	7.5	8.0	223	2	2.3	MJ	MI	MJ				MI			MJ			MI		
N88-3140		58.6	3.50	9	8.0	8.0	217	2	2.7	MJ		MI		MI					MJ					
MT8849		59.5	6.75	9	7.0	8.0	204	1	1.0	MJ	MJ	MJ		MJ		MI			MJ	MI		MI		
BW152		56.5	4.00	9	7.5	8.5	205	2	3.3	MI								MI	MJ			MI		
8601AE3C		59.0	3.50	9	7.5	8.0	200	2	3.0	MJ	MI	MI							MJ			MI		
BZ988-351		59.0	4.50	9	7.5	8.0	218	2	1.7	MJ	MJ	MJ		MJ					MJ			MI		
BZ984-334		56.2	5.00	7	7.5	8.0	193	2	2.0	MJ	MI	MJ		MJ					MJ			MI		

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	20.9	8	13.9	61.6	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	184
MAJOR FAULTING VALUES	56.9	17.9	18	12.9	59.6	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	174

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

Statistical Evaluation of Uniform Sample from Midwest Region

Table 6

BUTTE86 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	56.64	3.01	53.00	60.40	7.40
1000 Ker. Wt.	29.88	4.80	23.60	36.40	12.80
Wht.Protein 14%	14.66	0.92	13.60	15.70	2.10
Wht. Ash 14%	1.79	0.16	1.57	2.03	0.46
Hardness	72.80	7.53	62.00	83.00	21.00
Extraction	66.40	2.22	64.20	69.50	5.30
Fl. Ash @ 65%	0.39	0.03	0.35	0.43	0.08
Fl. Protein 14%	13.10	1.09	11.90	14.30	2.40
Mix Pattern	2.20	0.45	2.00	3.00	1.00
Bake Abs.	58.14	1.46	56.50	60.00	3.50
Loaf Vol.	196.60	9.13	189.00	211.00	22.00

BW152 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.24	2.91	54.40	62.00	7.60
1000 Ker. Wt.	28.30	3.97	25.00	35.20	10.20
Wht.Protein 14%	15.56	0.86	14.30	16.40	2.10
Wht. Ash 14%	1.78	0.10	1.61	1.88	0.27
Hardness	80.00	14.27	69.00	104.00	35.00
Extraction	66.58	2.42	63.50	70.10	6.60
Fl. Ash @ 65%	0.40	0.05	0.34	0.47	0.13
Fl. Protein 14%	14.38	1.02	13.20	15.40	2.20
Mix Pattern	1.80	0.84	1.00	3.00	2.00
Bake Abs.	56.62	1.66	53.80	57.90	4.10
Loaf Vol.	197.60	11.46	184.00	210.00	26.00

BZ984-334 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	49.46	4.62	45.00	56.80	11.80
1000 Ker. Wt.	23.10	6.06	18.20	33.10	14.90
Wht.Protein 14%	15.58	1.01	14.50	17.00	2.50
Wht. Ash 14%	2.04	0.23	1.67	2.23	0.56
Hardness	50.20	3.96	46.00	56.00	10.00
Extraction	60.04	4.45	56.00	67.20	11.20
Fl. Ash @ 65%	0.46	0.07	0.35	0.54	0.19
Fl. Protein 14%	14.82	1.09	13.70	16.50	2.80
Mix Pattern	2.60	0.55	2.00	3.00	1.00
Bake Abs.	57.16	1.16	56.20	59.00	2.80
Loaf Vol.	193.40	6.35	187.00	204.00	17.00

BZ988-351 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	49.94	5.25	45.10	58.20	13.10
1000 Ker. Wt.	19.20	6.14	15.00	29.80	14.80
Wht.Protein 14%	15.74	0.61	15.20	16.40	1.20
Wht. Ash 14%	1.93	0.19	1.62	2.08	0.46
Hardness	55.00	13.04	42.00	73.00	31.00
Extraction	61.18	4.59	56.00	66.70	10.70
Fl. Ash @ 65%	0.40	0.06	0.31	0.46	0.15
Fl. Protein 14%	14.90	0.48	14.50	15.60	1.10
Mix Pattern	2.40	0.55	2.00	3.00	1.00
Bake Abs.	57.92	1.77	55.80	60.30	4.50
Loaf Vol.	190.80	17.28	171.00	218.00	47.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 7

CHRIS n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.62	2.52	54.80	60.80	6.00
1000 Ker. Wt.	23.74	2.71	21.50	28.10	6.60
Wht.Protein 14%	14.70	0.94	13.80	15.90	2.10
Wht. Ash 14%	1.72	0.13	1.52	1.87	0.35
Hardness	70.80	5.81	62.00	78.00	16.00
Extraction	67.70	1.73	66.00	70.60	4.60
Fl. Ash @ 65%	0.37	0.01	0.35	0.38	0.03
Fl. Protein 14%	13.86	1.11	12.70	15.30	2.60
Mix Pattern	2.20	0.84	1.00	3.00	2.00
Bake Abs.	58.88	1.91	56.20	61.10	4.90
Loaf Vol.	197.00	12.23	182.00	213.00	31.00

ERA n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	54.22	4.33	49.10	60.30	11.20
1000 Ker. Wt.	21.94	4.81	18.20	29.80	11.60
Wht.Protein 14%	14.06	1.11	12.80	15.10	2.30
Wht. Ash 14%	1.84	0.18	1.54	1.97	0.43
Hardness	65.20	8.81	56.00	77.00	21.00
Extraction	66.46	3.92	61.50	72.20	10.70
Fl. Ash @ 65%	0.44	0.05	0.36	0.47	0.11
Fl. Protein 14%	12.64	1.02	11.60	13.90	2.30
Mix Pattern	2.00	0.00	2.00	2.00	0.00
Bake Abs.	56.54	1.14	55.00	57.60	2.60
Loaf Vol.	205.00	11.60	187.00	219.00	32.00

MARQUIS n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	56.28	2.58	54.30	60.50	6.20
1000 Ker. Wt.	22.64	4.60	16.40	29.20	12.80
Wht.Protein 14%	14.44	1.48	13.20	16.10	2.90
Wht. Ash 14%	1.83	0.14	1.65	1.98	0.33
Hardness	68.20	4.55	63.00	73.00	10.00
Extraction	66.26	2.03	64.30	68.60	4.30
Fl. Ash @ 65%	0.43	0.05	0.38	0.51	0.13
Fl. Protein 14%	13.30	1.47	11.80	15.10	3.30
Mix Pattern	2.00	0.00	2.00	2.00	0.00
Bake Abs.	56.68	1.76	53.80	57.90	4.10
Loaf Vol.	190.40	8.11	181.00	200.00	19.00

MN89103 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	55.56	3.35	52.20	60.40	8.20
1000 Ker. Wt.	24.84	4.53	21.20	32.70	11.50
Wht.Protein 14%	14.42	1.00	13.20	15.70	2.50
Wht. Ash 14%	1.73	0.20	1.41	1.96	0.55
Hardness	76.80	9.12	68.00	90.00	22.00
Extraction	66.84	2.19	64.60	70.40	5.80
Fl. Ash @ 65%	0.35	0.04	0.31	0.41	0.10
Fl. Protein 14%	13.22	1.09	11.90	14.50	2.60
Mix Pattern	2.00	0.71	1.00	3.00	2.00
Bake Abs.	57.10	1.68	55.30	59.60	4.30
Loaf Vol.	194.20	14.31	170.00	206.00	36.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 8

MN90071 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.00	2.98	53.80	61.60	7.80
1000 Ker. Wt.	30.24	5.39	25.60	39.10	13.50
Wht.Protein 14%	14.34	1.04	12.90	15.80	2.90
Wht. Ash 14%	1.77	0.16	1.54	1.97	0.43
Hardness	72.00	6.32	65.00	81.00	16.00
Extraction	67.96	2.58	65.60	71.60	6.00
Fl. Ash @ 65%	0.38	0.04	0.33	0.44	0.11
Fl. Protein 14%	13.10	1.16	11.70	14.50	2.80
Mix Pattern	2.60	0.55	2.00	3.00	1.00
Bake Abs.	58.54	1.69	56.50	60.80	4.30
Loaf Vol.	203.80	10.71	187.00	213.00	26.00

MN90114 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	55.58	4.17	49.80	60.90	11.10
1000 Ker. Wt.	27.64	5.82	22.40	37.50	15.10
Wht.Protein 14%	14.30	0.96	12.90	15.60	2.70
Wht. Ash 14%	1.83	0.21	1.53	2.11	0.58
Hardness	83.00	6.78	75.00	93.00	18.00
Extraction	64.48	3.73	61.10	69.90	8.80
Fl. Ash @ 65%	0.47	0.08	0.37	0.55	0.18
Fl. Protein 14%	12.30	1.04	10.70	13.60	2.90
Mix Pattern	1.40	0.55	1.00	2.00	1.00
Bake Abs.	57.78	3.36	53.20	62.30	9.10
Loaf Vol.	189.60	13.94	170.00	201.00	31.00

MN90253 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	55.64	3.02	52.80	60.20	7.40
1000 Ker. Wt.	30.32	5.43	27.00	39.70	12.70
Wht.Protein 14%	13.40	0.57	12.50	14.00	1.50
Wht. Ash 14%	1.88	0.18	1.59	2.09	0.50
Hardness	52.60	9.40	44.00	65.00	21.00
Extraction	64.74	3.43	61.90	70.40	8.50
Fl. Ash @ 65%	0.40	0.05	0.33	0.45	0.12
Fl. Protein 14%	12.42	0.73	11.60	13.20	1.60
Mix Pattern	2.60	0.55	2.00	3.00	1.00
Bake Abs.	56.20	2.02	53.20	58.20	5.00
Loaf Vol.	197.00	15.05	177.00	216.00	39.00

MT8849 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	52.82	5.27	47.50	60.60	13.10
1000 Ker. Wt.	25.54	7.46	16.60	36.80	20.20
Wht.Protein 14%	14.54	0.84	13.90	16.00	2.10
Wht. Ash 14%	1.91	0.19	1.62	2.11	0.49
Hardness	65.80	5.76	61.00	75.00	14.00
Extraction	64.20	3.75	59.30	69.70	10.40
Fl. Ash @ 65%	0.44	0.07	0.36	0.54	0.18
Fl. Protein 14%	13.34	0.86	12.50	14.70	2.20
Mix Pattern	2.60	1.14	1.00	4.00	3.00
Bake Abs.	57.76	2.23	54.60	60.00	5.40
Loaf Vol.	199.40	15.57	179.00	217.00	38.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 9

	ND671 n=5					ND673 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.82	2.65	55.70	62.00	6.30	57.24	2.81	54.10	61.60	7.50
1000 Ker. Wt.	27.12	4.92	22.90	35.50	12.60	29.34	5.43	25.30	38.80	13.50
Wht.Protein 14%	14.82	0.91	13.30	15.60	2.30	14.76	1.02	13.30	15.90	2.60
Wht. Ash 14%	1.79	0.15	1.55	1.92	0.37	1.81	0.16	1.57	2.02	0.45
Hardness	66.00	10.07	58.00	83.00	25.00	71.00	8.15	59.00	81.00	22.00
Extraction	65.92	2.55	63.00	69.90	6.90	66.36	2.78	63.80	70.90	7.10
Fl. Ash @ 65%	0.38	0.04	0.33	0.44	0.11	0.37	0.02	0.34	0.40	0.06
Fl. Protein 14%	14.20	1.15	12.50	15.00	2.50	13.62	1.31	11.80	14.70	2.90
Mix Pattern	2.40	0.55	2.00	3.00	1.00	3.80	0.84	3.00	5.00	2.00
Bake Abs.	59.22	0.68	58.20	60.00	1.80	58.50	1.83	55.80	60.80	5.00
Loaf Vol.	208.40	13.15	187.00	220.00	33.00	194.60	8.02	187.00	205.00	18.00

	ND674 n=5					ND677 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.32	3.07	53.80	61.80	8.00	56.82	3.53	53.00	62.50	9.50
1000 Ker. Wt.	27.68	5.33	22.30	36.00	13.70	26.32	6.12	22.20	37.00	14.80
Wht.Protein 14%	15.52	1.06	14.00	16.70	2.70	14.50	0.84	13.60	15.80	2.20
Wht. Ash 14%	1.81	0.16	1.62	2.05	0.43	1.83	0.16	1.58	2.02	0.44
Hardness	73.00	7.91	66.00	83.00	17.00	56.60	5.55	50.00	64.00	14.00
Extraction	66.74	3.34	63.10	71.10	8.00	65.96	3.09	62.30	70.80	8.50
Fl. Ash @ 65%	0.38	0.03	0.34	0.42	0.08	0.37	0.04	0.33	0.41	0.08
Fl. Protein 14%	14.66	1.01	13.20	15.60	2.40	13.52	0.91	12.60	14.60	2.00
Mix Pattern	4.20	0.45	4.00	5.00	1.00	2.80	0.45	2.00	3.00	1.00
Bake Abs.	58.50	1.83	56.50	60.80	4.30	57.44	1.82	55.00	59.60	4.60
Loaf Vol.	207.40	15.36	190.00	222.00	32.00	203.40	10.16	193.00	216.00	23.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 10

	ND678 n=5					N86-0348 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.98	2.54	56.30	61.80	5.50	54.66	4.00	50.50	60.90	10.40
1000 Ker. Wt.	27.58	3.95	23.80	33.10	9.30	25.00	6.18	20.90	35.50	14.60
Wht.Protein 14%	14.78	0.79	13.50	15.40	1.90	14.78	0.78	13.70	15.90	2.20
Wht. Ash 14%	1.72	0.13	1.52	1.84	0.32	1.90	0.18	1.63	2.12	0.49
Hardness	78.40	9.24	70.00	93.00	23.00	63.40	7.23	56.00	75.00	19.00
Extraction	67.00	2.75	63.70	70.20	6.50	63.74	3.81	60.90	70.20	9.30
Fl. Ash @ 65%	0.37	0.05	0.31	0.44	0.13	0.47	0.06	0.36	0.52	0.16
Fl. Protein 14%	13.08	1.00	11.60	14.10	2.50	13.54	0.73	12.40	14.30	1.90
Mix Pattern	2.60	0.55	2.00	3.00	1.00	2.40	0.55	2.00	3.00	1.00
Bake Abs.	59.26	1.94	56.50	61.40	4.90	57.94	2.47	53.80	60.00	6.20
Loaf Vol.	196.80	7.26	190.00	206.00	16.00	195.00	11.60	180.00	205.00	25.00

	N88-3140 n=5					N90-0666 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	54.08	3.94	50.20	60.30	10.10	56.88	3.08	52.60	60.40	7.80
1000 Ker. Wt.	26.32	6.32	22.10	37.00	14.90	29.56	4.52	24.90	36.80	11.90
Wht.Protein 14%	16.34	1.08	15.50	17.80	2.30	14.38	0.68	13.30	15.10	1.80
Wht. Ash 14%	1.97	0.19	1.66	2.16	0.50	1.75	0.13	1.60	1.96	0.36
Hardness	62.60	11.72	55.00	83.00	28.00	72.20	6.06	66.00	79.00	13.00
Extraction	62.56	3.88	59.60	69.00	9.40	67.62	2.28	65.30	71.00	5.70
Fl. Ash @ 65%	0.40	0.05	0.32	0.44	0.12	0.39	0.05	0.35	0.47	0.12
Fl. Protein 14%	15.64	0.97	14.70	17.00	2.30	13.10	0.72	12.10	13.80	1.70
Mix Pattern	2.60	0.55	2.00	3.00	1.00	2.60	0.89	1.00	3.00	2.00
Bake Abs.	58.98	0.98	57.90	60.50	2.60	57.60	2.56	53.20	59.30	6.10
Loaf Vol.	207.40	13.87	187.00	222.00	35.00	194.40	23.31	170.00	224.00	54.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 11

	N90-0671 n=5					N90-0700 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	56.76	2.83	53.50	60.80	7.30	53.80	4.53	49.10	60.20	11.10
1000 Ker. Wt.	28.80	3.87	25.40	35.20	9.80	21.22	4.81	17.50	29.10	11.60
Wht.Protein 14%	13.48	0.73	12.60	14.60	2.00	14.52	0.74	13.40	15.40	2.00
Wht. Ash 14%	1.70	0.14	1.52	1.88	0.36	1.71	0.16	1.48	1.92	0.44
Hardness	72.20	8.58	62.00	83.00	21.00	71.80	5.81	66.00	79.00	13.00
Extraction	67.76	2.28	65.00	71.10	6.10	63.70	3.52	60.70	68.90	8.20
Fl. Ash @ 65%	0.38	0.03	0.34	0.42	0.08	0.39	0.05	0.31	0.43	0.12
Fl. Protein 14%	12.14	0.83	11.20	13.10	1.90	13.38	0.74	12.50	14.20	1.70
Mix Pattern	2.00	0.71	1.00	3.00	2.00	2.80	0.45	2.00	3.00	1.00
Bake Abs.	55.34	0.94	54.60	56.90	2.30	57.58	1.28	55.50	59.00	3.50
Loaf Vol.	180.60	14.33	160.00	197.00	37.00	201.00	16.49	180.00	223.00	43.00

	SBE0437 n=5					SBE0444 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	56.94	3.01	53.00	60.10	7.10	56.02	3.30	53.10	60.90	7.80
1000 Ker. Wt.	29.16	6.61	23.40	39.70	16.30	28.36	5.88	24.00	37.60	13.60
Wht.Protein 14%	13.98	0.92	12.80	15.20	2.40	13.92	0.61	13.20	14.80	1.60
Wht. Ash 14%	1.73	0.16	1.51	1.95	0.44	1.79	0.16	1.54	1.96	0.42
Hardness	64.00	7.68	55.00	75.00	20.00	53.60	7.54	45.00	61.00	16.00
Extraction	68.56	2.38	66.00	71.90	5.90	67.20	3.14	64.40	72.10	7.70
Fl. Ash @ 65%	0.34	0.03	0.32	0.39	0.07	0.38	0.04	0.33	0.42	0.09
Fl. Protein 14%	12.54	1.17	11.20	14.00	2.80	12.78	0.51	12.00	13.30	1.30
Mix Pattern	2.40	0.89	1.00	3.00	2.00	2.00	0.71	1.00	3.00	2.00
Bake Abs.	57.68	2.20	54.30	60.00	5.70	56.66	2.29	53.50	59.60	6.10
Loaf Vol.	198.00	12.88	182.00	216.00	34.00	192.80	20.58	169.00	218.00	49.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 12

SD0005 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	56.96	2.98	53.00	60.30	7.30
1000 Ker. Wt.	29.20	6.95	24.40	40.80	16.40
Wht.Protein 14%	13.52	1.06	12.10	14.80	2.70
Wht. Ash 14%	1.70	0.16	1.48	1.90	0.42
Hardness	66.00	9.92	55.00	82.00	27.00
Extraction	69.56	2.33	66.50	72.80	6.30
Fl. Ash @ 65%	0.34	0.03	0.30	0.37	0.07
Fl. Protein 14%	12.08	1.28	10.40	13.40	3.00
Mix Pattern	2.20	0.45	2.00	3.00	1.00
Bake Abs.	57.12	2.32	54.60	60.50	5.90
Loaf Vol.	198.00	13.21	178.00	208.00	30.00

SD0010 n=5

MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
55.40	3.64	51.30	60.50	9.20
26.34	5.25	22.50	35.20	12.70
14.38	0.72	13.30	15.00	1.70
1.79	0.13	1.57	1.92	0.35
69.60	6.43	60.00	76.00	16.00
67.50	2.25	65.10	70.40	5.30
0.35	0.03	0.31	0.38	0.07
12.82	0.87	11.80	13.80	2.00
2.60	0.55	2.00	3.00	1.00
57.80	1.60	55.50	59.60	4.10
198.60	10.33	182.00	210.00	28.00

SD8070 n=5

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.56	2.56	55.80	62.00	6.20
1000 Ker. Wt.	28.18	3.86	25.30	34.70	9.40
Wht.Protein 14%	14.04	0.75	13.00	15.10	2.10
Wht. Ash 14%	1.79	0.18	1.52	1.98	0.46
Hardness	71.40	4.93	66.00	78.00	12.00
Extraction	66.78	2.82	63.20	71.10	7.90
Fl. Ash @ 65%	0.39	0.04	0.34	0.44	0.10
Fl. Protein 14%	12.64	0.88	11.80	13.90	2.10
Mix Pattern	2.40	0.55	2.00	3.00	1.00
Bake Abs.	57.36	2.30	55.00	60.80	5.80
Loaf Vol.	199.20	11.03	182.00	210.00	28.00

SD8072 n=5

MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
56.16	3.92	52.20	62.00	9.80
27.02	4.99	23.00	35.00	12.00
14.50	1.16	13.40	15.80	2.40
1.88	0.17	1.62	2.08	0.46
68.00	9.14	58.00	82.00	24.00
66.80	3.05	64.10	71.50	7.40
0.41	0.02	0.38	0.44	0.06
13.40	1.44	11.70	15.00	3.30
2.80	0.84	2.00	4.00	2.00
57.24	1.48	55.00	58.60	3.60
193.20	6.18	185.00	202.00	17.00

Statistical Evaluation of Uniform Sample from Midwest Region

Table 13

	SD8073 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	55.56	4.07	51.40	61.30	9.90
1000 Ker. Wt.	27.02	5.27	21.90	34.80	12.90
Wht.Protein 14%	14.46	0.98	13.50	15.60	2.10
Wht. Ash 14%	1.91	0.23	1.58	2.20	0.62
Hardness	73.00	12.49	57.00	87.00	30.00
Extraction	65.22	4.31	60.40	71.60	11.20
Fl. Ash @ 65%	0.44	0.05	0.38	0.52	0.14
Fl. Protein 14%	13.38	1.08	12.10	14.50	2.40
Mix Pattern	3.80	0.84	3.00	5.00	2.00
Bake Abs.	59.08	1.16	57.60	60.30	2.70
Loaf Vol.	194.00	9.57	178.00	202.00	24.00

	STOA n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	55.44	3.30	51.60	60.20	8.60
1000 Ker. Wt.	25.16	4.60	20.50	32.70	12.20
Wht.Protein 14%	15.02	0.95	13.90	16.20	2.30
Wht. Ash 14%	1.88	0.18	1.59	2.07	0.48
Hardness	73.20	9.07	63.00	83.00	20.00
Extraction	65.66	2.46	63.50	69.40	5.90
Fl. Ash @ 65%	0.39	0.03	0.34	0.42	0.08
Fl. Protein 14%	14.28	1.00	13.20	15.30	2.10
Mix Pattern	3.00	0.00	3.00	3.00	0.00
Bake Abs.	59.00	1.24	57.60	60.30	2.70
Loaf Vol.	201.60	7.06	191.00	209.00	18.00

	XW398A4 n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	54.82	4.52	51.50	61.80	10.30
1000 Ker. Wt.	28.08	7.47	22.70	40.00	17.30
Wht.Protein 14%	14.56	0.82	13.40	15.60	2.20
Wht. Ash 14%	1.93	0.18	1.63	2.10	0.47
Hardness	58.00	4.64	54.00	66.00	12.00
Extraction	64.74	4.13	61.00	71.30	10.30
Fl. Ash @ 65%	0.46	0.06	0.38	0.53	0.15
Fl. Protein 14%	13.60	0.71	12.50	14.40	1.90
Mix Pattern	3.20	0.84	2.00	4.00	2.00
Bake Abs.	60.12	2.70	55.80	63.10	7.30
Loaf Vol.	215.80	25.67	186.00	240.00	54.00

	8601AE3C n=5				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.96	2.89	54.30	62.00	7.70
1000 Ker. Wt.	26.64	4.51	20.10	32.50	12.40
Wht.Protein 14%	15.28	0.79	14.50	16.60	2.10
Wht. Ash 14%	1.77	0.13	1.59	1.91	0.32
Hardness	71.00	6.93	62.00	78.00	16.00
Extraction	65.82	3.27	62.00	70.70	8.70
Fl. Ash @ 65%	0.43	0.05	0.36	0.51	0.15
Fl. Protein 14%	14.16	0.54	13.60	15.00	1.40
Mix Pattern	2.20	0.84	1.00	3.00	2.00
Bake Abs.	58.52	2.41	55.00	60.80	5.80
Loaf Vol.	208.00	15.23	192.00	232.00	40.00

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 14 STATE=NORTH DAKOTA STATION=WILLISTON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		61.3	33.7	50	2	1.41	13.1	87	3	64.9	0.34	12.0	5	1	55.8	2
CHRIS		61.6	30.1	41	1	1.48	14.8	72	4	63.6	0.31	14.0	5	2	58.6	2
ERA	S	61.7	32.5	56	2	1.40	12.6	82	2	68.8	0.31	11.3	5	2	55.0	2
STOA	S	60.0	32.9	47	1	1.37	14.3	80	4	67.4	0.28	13.2	5	4	58.6	3
BUTTE86	S	59.8	36.9	68	1	1.36	14.1	75	4	66.7	0.29	12.7	5	3	59.0	2
SD8072		59.7	35.1	70	1	1.42	13.1	79	3	68.4	0.31	12.0	5	2	57.9	2
SD8073		59.8	36.0	70	1	1.36	13.9	88	3	67.9	0.32	13.0	5	4	60.0	3
SD8070		60.6	36.0	64	2	1.32	14.0	79	4	67.6	0.29	12.7	5	3	57.9	2
SD0005		60.9	35.2	69	1	1.30	13.1	67	3	68.7	0.27	11.8	5	2	56.9	2
SD0010		59.5	36.0	65	1	1.42	14.6	76	4	67.6	0.29	13.4	5	4	63.4	3
MN89103		59.9	32.5	42	2	1.32	13.8	90	3	67.1	0.29	12.9	5	3	57.6	2
MN90071		60.2	44.6	87	1	1.47	14.6	77	4	66.4	0.34	13.5	5	4	60.5	3
MN90114		59.7	38.2	75	1	1.38	13.6	91	3	64.5	0.37	11.6	5	1	58.6	2
MN90253		60.3	32.7	59	2	1.35	14.1	80	4	65.5	0.33	12.4	5	1	59.0	2
SBE0437		60.4	35.5	68	1	1.38	13.3	80	3	68.5	0.29	12.0	5	2	58.2	2
SBE0444		59.9	34.7	68	2	1.38	13.0	63	3	69.1	0.29	12.2	5	2	57.3	2
ND671		60.9	36.8	70	1	1.39	15.5	74	4	66.7	0.28	14.9	5	4	60.8	3
ND673		61.9	39.4	75	1	1.34	13.6	71	3	68.5	0.29	12.8	5	3	59.3	3
ND674		61.1	33.9	72	1	1.52	14.8	82	4	66.6	0.34	14.4	5	4	60.3	4
ND677		60.2	36.2	66	1	1.34	14.2	64	4	67.3	0.30	13.9	5	4	59.3	2
ND678		61.9	31.5	36	2	1.34	14.3	75	4	64.2	0.30	13.1	5	3	59.0	2
XW398A4		59.9	40.2	74	1	1.44	13.3	69	3	67.5	0.34	12.4	5	2	58.2	2
N86-0348		59.4	34.2	65	2	1.48	14.1	67	4	67.9	0.35	13.5	5	4	59.0	2
N90-0666		59.1	34.7	69	1	1.44	14.1	85	4	67.8	0.34	13.2	5	4	59.6	3
N90-0671		60.3	34.0	73	1	1.38	12.6	73	2	67.3	0.33	11.2	5	2	53.5	2
N90-0700		58.4	29.4	39	2	1.39	13.7	72	3	0.0	0.00	0.0	5	1	0.0	0
N88-3140		59.6	36.2	73	1	1.49	14.8	77	4	0.0	0.00	0.0	5	1	0.0	0
MT8849		60.2	37.7	73	1	1.45	13.9	79	3	64.9	0.32	12.9	5	2	57.6	3
BW152		59.9	33.0	59	2	1.40	14.7	89	4	66.0	0.32	13.7	5	4	56.2	1
8601AE3C		62.8	38.5	73	1	1.37	14.1	70	4	66.3	0.32	12.9	5	3	57.9	2
BZ988-351		59.0	29.9	40	4	1.50	13.5	64	3	62.9	0.31	18.8	5	2	56.2	2
BZ984-334		57.1	35.7	65	2	1.58	13.6	46	3	65.0	0.34	13.0	5	3	55.0	2
AMIDON		59.9	36.9	51	2	1.40	13.1	97	3	67.2	0.35	12.2	5	2	56.5	2
GRANDIN	S	60.1	34.6	77	1	1.45	13.9	80	3	68.7	0.32	13.1	5	4	57.6	2
PROSPECT		59.7	35.7	60	1	1.40	12.9	66	2	67.9	0.29	12.0	5	2	55.0	1
BERGEN		59.1	37.0	67	2	1.34	13.0	70	3	70.7	0.30	11.8	5	2	57.6	2

TABLE 14 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=WILLISTON NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		55.8	3.00	7	8.5	8.0	169	2	2.0				MI	MI		MJ		MI	MJ					
CHRIS		58.6	2.50	9	8.0	8.0	180	1	2.3		MI			MJ				MI	MJ	MI				
ERA	S	55.0	4.00	7	8.0	8.0	169	2	2.0				MJ			MJ		MI	MJ					
STOA	S	58.6	4.00	9	8.0	8.0	176	2	3.3										MJ					
BUTTE86	S	59.0	3.00	7	8.0	8.0	173	2	3.0							MI		MI	MJ					
SD8072		57.9	3.00	7	8.0	7.5	183	2	2.3				MI			MJ		MI	MJ				MI	
SD8073		60.0	3.00	9	8.0	8.0	182	2	3.0				MI						MJ					
SD8070		57.9	3.00	9	8.0	8.0	192	2	3.0							MI		MI	MJ					
SD0005		56.9	3.75	9	8.0	8.0	183	2	2.3				MI			MJ		MI	MJ					
SD0010		63.4	2.75	9	8.0	8.0	198	3	3.7											MI				
MN89103		57.6	2.50	9	7.5	8.0	196	1	2.3				MI			MI		MI	MJ	MI		MI		
MN90071		60.5	3.00	9	8.0	8.0	188	3	3.7										MI					
MN90114		58.6	3.00	9	8.0	8.5	180	2	2.0				MI	MI		MJ		MI	MJ					
MN90253		59.0	2.50	9	8.0	7.5	184	1	2.0					MI		MJ		MI	MJ	MI			MI	
SBE0437		58.2	3.25	9	8.0	8.0	193	2	2.3				MI			MJ		MI	MJ					
SBE0444		57.3	3.00	7	8.0	8.0	182	2	2.3				MI			MJ		MI	MJ					
ND671		60.8	3.00	9	8.0	8.0	206	3	3.7										MI					
ND673		59.3	4.00	9	8.0	8.0	182	2	2.7				MI			MI			MJ					
ND674		60.3	4.75	9	8.0	7.5	213	2	3.3										MJ				MI	
ND677		59.3	3.50	9	8.0	8.0	197	2	3.3									MI	MJ					
ND678		59.0	3.50	9	8.5	8.0	187	2	3.0		MI			MI				MI	MJ					
XW398A4		58.2	4.00	9	8.5	8.0	175	2	2.3				MI			MJ		MI	MJ					
N86-0348		59.0	3.00	9	8.0	8.0	199	2	3.3									MI	MJ					
N90-0666		59.6	3.25	9	7.5	7.5	193	2	3.3										MJ			MI	MI	
N90-0671		53.5	5.50	7	7.5	8.0	168	2	2.0				MJ			MJ		MI	MJ			MI		
N90-0700		0.0	0.00	0	0.0	0.0	0	1	1.7		MI		MI	MJ		MJ			MJ		MJ	MJ	MJ	MJ
N88-3140		0.0	0.00	0	0.0	0.0	0	1	2.0					MJ		MJ			MJ		MJ	MJ	MJ	MJ
MT8849		57.6	5.50	9	8.0	8.0	192	2	2.3				MI	MI		MI			MJ					
BW152		56.2	2.50	9	8.0	8.0	185	1	3.0									MJ	MJ	MI				
8601AE3C		57.9	3.00	9	8.0	8.0	195	2	3.0							MI		MI	MJ					
BZ988-351		56.2	4.25	7	8.0	8.0	179	2	2.3		MI		MI	MJ				MI	MJ					
BZ984-334		55.0	4.50	9	8.5	7.5	200	2	2.7	MI			MI	MI				MI	MJ				MI	
AMIDON		56.5	4.00	7	8.0	8.0	176	2	2.3				MI			MJ		MI	MJ					
GRANDIN	S	57.6	4.00	7	8.0	7.5	182	2	3.0				MI					MI	MJ				MI	
PROSPECT		55.0	2.50	7	8.0	8.0	176	1	1.7				MJ			MJ		MJ	MJ	MI				
BERGEN		57.6	2.75	7	8.0	8.0	173	1	2.0				MI			MJ		MI	MJ	MI				

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	32.1	8	13.9	65.8	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	154
MAJOR FAULTING VALUES	56.9	29.1	18	12.9	63.8	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	144

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 15 STATE=NORTH DAKOTA STATION=DICKINSON NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		59.2	29.3	46	2	1.59	13.9	69	3	66.7	0.37	12.6	5	3	59.3	3
CHRIS		59.3	27.5	33	2	1.49	14.8	67	4	67.6	0.34	14.1	5	4	59.0	2
ERA	S	56.7	27.0	35	4	1.57	13.3	84	2	68.7	0.40	11.9	5	2	56.9	2
STOA	S	57.4	29.1	29	2	1.74	13.6	68	3	67.7	0.33	12.9	5	3	58.6	2
BUTTE86	S	58.2	34.8	61	1	1.57	14.8	90	4	68.0	0.34	13.2	5	4	60.0	2
SD8072		59.4	33.2	55	1	1.63	14.0	72	4	69.3	0.37	12.8	5	3	57.9	2
SD8073		58.5	34.2	58	1	1.59	14.1	82	4	69.0	0.38	12.9	5	3	59.3	3
SD8070		59.9	35.0	57	1	1.52	14.3	72	4	68.8	0.33	13.1	5	4	58.2	2
SD0005		59.0	32.8	59	1	1.48	13.1	74	3	70.5	0.32	12.0	5	2	57.9	2
SD0010		55.4	26.0	23	4	1.63	13.9	68	2	68.7	0.35	12.7	5	3	60.3	3
MN89103		55.8	27.1	20	6	1.54	13.5	99	2	66.4	0.35	12.4	5	2	57.9	1
MN90071		60.5	37.6	74	1	1.52	14.7	75	4	68.8	0.32	13.6	5	4	60.3	2
MN90114		56.6	32.4	52	2	1.64	14.3	95	3	64.6	0.43	12.5	5	2	57.9	2
MN90253		56.0	32.9	40	2	1.71	13.3	47	2	63.1	0.40	12.7	5	1	58.6	3
SBE0437		57.9	32.3	56	2	1.56	13.7	70	3	68.8	0.35	12.5	5	3	58.6	2
SBE0444		57.4	31.5	51	2	1.62	13.6	52	3	68.8	0.36	12.8	5	3	57.6	1
ND671		58.6	29.8	41	2	1.71	14.3	68	4	66.8	0.35	13.8	5	4	60.0	2
ND673		58.9	35.7	64	1	1.61	14.7	72	4	68.4	0.35	13.7	5	4	59.0	3
ND674		59.0	30.4	62	1	1.66	15.4	81	4	66.5	0.37	14.7	5	4	61.1	4
ND677		59.9	33.9	56	2	1.59	14.3	51	4	68.3	0.34	12.9	5	3	59.3	2
ND678		60.8	33.4	46	2	1.53	15.0	79	4	67.8	0.30	13.5	5	4	60.0	3
XW398A4		59.6	33.7	55	2	1.69	14.2	62	4	67.2	0.39	13.4	5	4	60.0	3
N86-0348		56.6	28.2	38	3	1.69	14.2	78	3	66.1	0.38	13.4	5	4	57.9	2
N90-0666		56.6	31.8	62	1	1.66	14.4	62	3	67.8	0.38	13.4	5	4	59.6	3
N90-0671		57.4	31.9	60	1	1.60	13.7	67	3	67.8	0.37	12.0	5	2	55.8	2
N90-0700		55.9	23.9	15	4	1.64	13.8	75	1	65.5	0.36	12.7	5	2	58.2	3
N88-3140		58.1	33.0	56	2	1.64	15.4	60	4	64.8	0.34	14.0	5	3	58.6	2
MT8849		58.2	36.8	58	2	1.69	14.3	68	4	64.8	0.38	12.6	5	2	59.0	3
BW152		56.8	29.6	40	2	1.65	14.7	69	3	66.8	0.36	13.9	5	4	57.3	2
8601AE3C		59.6	34.1	61	2	1.54	14.7	64	4	66.8	0.36	13.7	5	4	60.3	3
BZ988-351		48.2	20.6	7	16	1.92	15.9	70	1	58.0	0.41	14.7	5	2	60.3	3
BZ984-334		50.4	25.6	14	8	1.99	14.9	52	3	59.8	0.47	14.0	5	2	59.3	3

TABLE 15 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=NORTH DAKOTA STATION=DICKINSON NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES															
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		59.3	3.25	9	8.0	8.0	193	2	2.7				MI			MI			MJ					
CHRIS		59.0	3.00	9	8.0	8.0	182	1	3.0		MI							MI	MJ					MI
ERA	S	56.9	4.25	9	8.0	8.0	210	2	2.0	MJ	MI		MI			MJ		MI	MJ					
STOA	S	58.6	4.00	9	8.0	8.0	212	2	2.7	MI			MI			MI		MI	MJ					
BUTTE86	S	60.0	3.00	9	8.0	8.0	193	2	3.3									MI	MJ					
SD8072		57.9	3.75	9	8.0	8.0	184	1	2.7							MI		MI	MJ					MI
SD8073		59.3	3.50	7	7.5	8.0	176	1	2.7							MI			MJ			MI		MI
SD8070		58.2	3.50	9	8.0	7.5	197	2	3.3									MI	MJ				MI	
SD0005		57.9	4.00	9	8.0	8.0	183	1	2.0				MI			MJ		MI	MJ					MI
SD0010		60.3	4.25	9	8.0	7.5	213	2	2.3	MJ	MI		MI			MI			MJ				MI	
MN89103		57.9	3.25	9	7.5	8.0	190	1	1.7	MJ	MI		MI			MJ		MJ	MJ			MI		
MN90071		60.3	2.75	9	8.0	8.0	203	1	3.0									MI	MJ	MI				
MN90114		57.9	3.25	9	8.0	8.5	188	2	2.3	MJ				MI		MI		MI	MJ					
MN90253		58.6	5.00	9	8.0	8.0	203	2	1.7	MJ			MI	MJ		MI			MJ					
SBE0437		58.6	4.25	9	8.0	8.0	201	2	2.7	MI			MI			MI		MI	MJ					
SBE0444		57.6	3.00	9	8.0	8.5	187	1	2.3	MI			MI			MI		MJ	MJ					
ND671		60.0	3.50	9	8.0	8.0	206	2	3.3									MI	MJ					
ND673		59.0	4.50	9	8.0	8.0	210	2	3.3										MJ					
ND674		61.1	5.25	9	8.0	8.0	214	3	3.7										MI					
ND677		59.3	3.75	9	8.0	8.0	208	2	3.0							MI		MI	MJ					
ND678		60.0	3.00	9	8.5	8.0	202	2	3.3										MJ					
XW398A4		60.0	4.00	9	8.0	8.0	208	2	3.3										MJ					
N86-0348		57.9	3.50	9	8.0	8.0	192	2	3.0	MJ								MI	MJ					
N90-0666		59.6	3.25	9	7.5	8.0	208	2	3.0	MJ									MJ			MI		
N90-0671		55.8	6.00	7	7.5	8.0	183	1	2.0	MI			MI			MJ		MI	MJ	MI		MI		MI
N90-0700		58.2	3.50	9	8.0	8.0	194	2	1.7	MJ	MJ		MI	MI		MI			MJ					
N88-3140		58.6	3.75	9	8.0	8.0	195	2	3.0					MI				MI	MJ					
MT8849		59.0	5.25	9	8.0	7.5	206	2	2.7					MI		MI			MJ				MI	
BW152		57.3	3.00	9	8.0	7.5	195	2	3.0	MJ								MI	MJ				MI	
8601AE3C		60.3	3.50	9	8.0	7.5	213	2	3.3										MJ				MI	
BZ988-351		60.3	4.00	9	7.5	7.5	205	2	1.7	MJ	MJ	MJ		MJ					MJ			MI	MI	
BZ984-334		59.3	5.00	9	8.0	7.5	209	2	2.3	MJ	MI	MI		MJ					MJ				MI	

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	28.2	8	13.9	66.0	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	184
MAJOR FAULTING VALUES	56.9	25.2	18	12.9	64.0	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	174

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 16 STATE=MONTANA STATION=HAVRE NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		59.0	33.8	66	1	1.61	12.5	67	2	63.9	0.37	11.2	5	2	54.6	1
CHRIS		58.6	28.2	36	1	1.58	13.9	58	3	58.8	0.32	13.0	5	2	54.6	2
ERA	S	58.2	29.1	46	3	1.61	11.8	60	2	64.3	0.34	10.6	5	2	52.6	1
STOA	S	57.9	33.0	49	1	1.57	13.5	60	3	66.8	0.28	12.1	5	2	56.9	2
BUTTE86	S	57.9	36.9	67	1	1.55	12.8	59	2	65.9	0.29	10.9	5	2	54.6	2
SD8072		58.6	35.6	75	1	1.60	12.3	60	2	66.9	0.34	10.9	5	2	52.6	1
SD8073		58.7	36.6	74	1	1.56	11.9	67	2	65.2	0.36	10.5	5	2	55.0	2
SD8070		59.2	34.2	60	1	1.57	12.8	59	2	64.6	0.32	11.2	5	2	53.8	1
SD0005		57.4	33.9	68	0	1.57	12.8	70	2	65.3	0.30	11.5	5	2	54.6	2
SD0010		57.8	34.5	58	1	1.59	12.5	53	2	67.9	0.28	10.9	5	2	53.2	2
MN89103		57.2	30.0	35	3	1.51	12.5	69	2	67.0	0.30	11.1	5	2	53.5	1
MN90071		58.4	34.5	67	1	1.54	12.1	60	2	68.4	0.33	10.7	5	2	53.8	1
MN90114		59.0	34.8	68	1	1.61	12.9	63	2	65.1	0.39	10.8	5	2	53.2	1
MN90253		58.5	39.2	73	1	1.56	12.1	41	2	65.7	0.29	11.0	5	2	51.9	1
SBE0437		57.0	33.2	65	1	1.58	12.8	64	2	67.6	0.31	11.6	5	2	54.3	2
SBE0444		58.3	37.5	71	1	1.57	12.0	45	2	70.9	0.31	10.8	5	2	53.5	2
ND671		59.5	33.2	56	1	1.59	13.0	67	3	67.9	0.29	12.1	5	2	56.5	1
ND673		59.5	36.5	69	1	1.53	12.9	56	2	69.3	0.30	11.4	5	2	54.3	2
ND674		60.1	34.7	69	0	1.62	13.3	68	3	67.1	0.35	12.1	5	2	54.6	2
ND677		58.9	33.9	60	1	1.64	13.3	49	3	67.2	0.31	12.1	5	2	54.6	2
ND678		59.8	29.8	34	2	1.55	12.9	73	2	65.2	0.33	11.1	5	2	53.5	2
XW398A4		58.9	38.8	75	1	1.63	12.8	48	2	70.2	0.32	11.8	5	2	55.0	2
N86-0348		58.3	32.2	60	2	1.66	12.7	49	2	67.6	0.36	11.5	5	2	53.2	1
N90-0666		57.8	34.6	71	1	1.61	13.3	61	3	68.6	0.33	12.2	5	2	55.0	2
N90-0671		57.0	31.8	67	1	1.58	12.0	68	2	67.6	0.34	10.7	5	2	50.5	1
N90-0700		57.2	30.3	44	2	1.50	12.6	60	2	63.9	0.33	10.9	5	2	53.2	1
N88-3140		57.0	35.1	75	1	1.67	13.7	67	3	63.3	0.30	12.6	5	2	55.0	1
MT8849		59.3	37.6	70	0	1.66	13.1	62	3	67.1	0.33	12.0	5	2	52.6	2
BW152		57.8	32.2	51	1	1.58	13.3	58	3	68.1	0.36	11.7	5	2	52.9	1
8601AE3C		59.8	35.5	61	1	1.59	13.3	56	3	70.1	0.36	12.4	5	2	54.6	2
BZ988-351		56.8	31.5	49	4	1.53	12.9	38	1	67.6	0.32	11.7	5	2	53.8	1
BZ984-334		57.6	37.5	73	2	1.59	12.3	38	2	67.5	0.35	11.5	5	2	52.9	1

TABLE 16 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=MONTANA STATION=HAVRE NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES															
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		54.6	4.00	5	9.0	8.5	169	1	1.7				MJ			MJ		MJ	MJ		MI			
CHRIS		54.6	5.00	4	8.5	8.0	159	1	2.0		MI		MI	MJ				MI	MJ		MJ			
ERA	S	52.6	6.50	4	8.0	7.5	154	1	1.7		MI		MJ			MJ		MJ	MJ	MI	MJ		MI	
STOA	S	56.9	4.00	7	8.0	8.0	183	2	2.3	MI			MI			MJ		MI	MJ					
BUTTE86	S	54.6	3.50	4	8.0	8.0	169	1	1.7	MI			MJ			MJ		MI	MJ		MJ			
SD8072		52.6	4.50	4	7.0	7.0	153	1	1.7				MJ			MJ		MJ	MJ		MJ	MI	MI	
SD8073		55.0	4.50	4	8.0	7.0	155	1	1.7				MJ			MJ		MI	MJ		MJ		MI	
SD8070		53.8	4.25	4	8.0	8.0	167	1	1.7				MJ			MJ		MJ	MJ		MJ			
SD0005		54.6	5.00	7	8.0	7.5	174	2	2.0	MI			MJ			MJ		MI	MJ				MI	
SD0010		53.2	5.25	4	8.0	7.5	156	1	1.7	MI			MJ			MJ		MI	MJ		MJ		MI	
MN89103		53.5	3.50	4	8.0	7.5	174	1	1.7	MI	MI		MJ			MJ		MJ	MJ		MJ		MI	
MN90071		53.8	4.50	4	9.0	7.5	162	1	1.7				MJ			MJ		MJ	MJ		MJ		MI	
MN90114		53.2	3.50	4	8.5	7.5	167	1	1.7				MJ			MJ		MJ	MJ		MJ		MI	
MN90253		51.9	6.00	4	8.5	6.0	137	1	1.7				MJ			MJ		MJ	MJ	MI	MJ		MI	MJ
SBE0437		54.3	4.50	7	8.5	7.5	179	2	2.0	MI			MJ			MJ		MI	MJ				MI	
SBE0444		53.5	4.25	4	8.0	7.0	158	1	1.7				MJ			MJ		MI	MJ		MJ		MI	
ND671		56.5	3.50	5	8.0	8.5	179	1	2.0				MI			MJ		MJ	MJ		MI			
ND673		54.3	5.00	4	8.5	8.0	169	1	1.7				MJ			MJ		MI	MJ		MJ			
ND674		54.6	5.50	4	8.0	7.5	182	1	2.0				MI			MJ		MI	MJ		MJ		MI	
ND677		54.6	4.50	7	8.0	8.0	173	2	2.3				MI			MJ		MI	MJ					
ND678		53.5	4.00	4	8.5	8.5	166	1	1.7		MI		MJ			MJ		MI	MJ		MJ			
XW398A4		55.0	4.50	7	8.0	8.0	178	2	2.0				MJ			MJ		MI	MJ					
N86-0348		53.2	4.00	4	8.5	8.0	168	1	1.7				MJ			MJ		MJ	MJ		MJ			
N90-0666		55.0	4.50	4	7.0	7.0	163	1	2.0	MI			MI			MJ		MI	MJ		MJ	MI	MI	
N90-0671		50.5	7.00	4	7.5	6.0	138	1	1.7	MI			MJ			MJ		MJ	MJ	MI	MJ	MI	MI	MI
N90-0700		53.2	5.50	4	8.0	7.0	156	1	1.7	MI	MI		MJ			MJ		MJ	MJ		MJ		MI	
N88-3140		55.0	3.25	7	8.0	7.5	163	1	2.0	MI			MI	MI		MI		MJ	MJ				MI	
MT8849		52.6	10.00	4	7.5	6.0	145	1	2.0				MI			MJ		MI	MJ	MJ	MJ	MI	MI	MI
BW152		52.9	3.50	4	8.0	7.5	154	1	2.0	MI			MI			MJ		MJ	MJ		MJ		MI	
8601AE3C		54.6	4.50	4	8.0	8.0	174	1	2.0				MI			MJ		MI	MJ		MJ			
BZ988-351		53.8	4.50	4	8.5	8.0	152	1	1.3	MJ			MJ			MJ		MJ	MJ		MJ			
BZ984-334		52.9	4.75	4	9.0	8.0	170	1	1.7	MI			MJ			MJ		MJ	MJ		MJ			

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	30.9	8	13.9	63.6	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	148
MAJOR FAULTING VALUES	56.9	27.9	18	12.9	61.6	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	138

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

STATE=MONTANA STATION=SIDNEY NURSERY=UNIFORM

TABLE 17

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		57.0	21.6	42	3	1.68	12.2	61	1	68.0	0.40	11.4	5	2	53.8	2
CHRIS		57.2	25.3	22	3	1.66	13.3	66	2	68.9	0.35	12.7	5	3	55.3	2
ERA	S	57.2	28.5	28	4	1.67	12.0	52	2	69.5	0.37	10.8	5	2	53.5	2
STOA	S	57.0	31.2	39	2	1.73	13.3	66	3	69.8	0.33	12.4	5	2	56.9	2
BUTTE86	S	56.5	34.0	58	1	1.70	12.5	62	1	68.8	0.35	10.9	5	2	55.0	2
SD8072		57.2	34.6	65	1	1.69	12.3	59	2	70.2	0.37	11.0	5	2	54.3	1
SD8073		56.4	32.5	61	2	1.72	12.6	61	1	68.9	0.39	11.4	5	2	56.2	2
SD8070		58.6	34.6	54	1	1.68	13.2	68	3	69.1	0.34	11.7	5	2	58.2	3
SD0005		58.3	35.5	69	1	1.55	12.0	59	2	72.1	0.33	10.9	5	2	57.6	3
SD0010		56.2	31.8	46	2	1.66	12.5	63	1	69.4	0.32	11.1	5	2	57.3	2
MN89103		57.0	29.6	29	4	1.58	12.1	66	2	68.6	0.33	10.8	5	2	54.6	1
MN90071		57.8	36.4	68	1	1.65	12.7	76	2	69.6	0.35	11.5	5	2	57.6	2
MN90114		57.8	35.7	65	1	1.66	12.4	73	2	66.9	0.42	10.5	5	1	54.3	1
MN90253		56.4	37.2	70	1	1.73	12.0	54	1	67.6	0.38	11.4	5	2	55.0	2
SBE0437		58.0	34.0	67	1	1.58	12.6	59	2	70.6	0.35	11.2	5	2	55.0	2
SBE0444		57.7	33.9	65	2	1.65	12.4	60	2	71.3	0.34	11.7	5	2	55.0	1
ND671		59.0	33.2	53	1	1.67	13.7	60	3	69.1	0.33	12.4	5	2	57.9	2
ND673		59.0	35.2	67	1	1.68	12.7	62	2	68.7	0.34	11.7	5	2	55.0	2
ND674		59.6	32.7	64	1	1.68	14.2	63	4	68.6	0.37	13.1	5	4	57.6	4
ND677		58.5	32.8	57	1	1.69	14.0	47	4	68.2	0.33	13.1	5	4	56.9	2
ND678		60.4	30.7	37	2	1.62	13.4	66	3	67.0	0.33	12.0	5	1	56.5	2
XW398A4		57.0	38.5	71	1	1.72	13.0	70	3	69.2	0.39	12.4	5	2	56.2	2
N86-0348		57.7	32.1	63	2	1.68	12.3	49	2	67.8	0.40	11.2	5	2	56.9	2
N90-0666		57.2	32.4	64	1	1.64	13.3	78	3	70.7	0.37	12.4	5	2	59.0	3
N90-0671		56.7	31.3	65	2	1.54	12.3	56	1	69.2	0.43	10.9	5	2	52.6	2
N90-0700		55.3	27.8	25	2	1.54	12.8	67	1	67.1	0.34	11.7	5	1	55.3	2
N88-3140		54.7	30.7	56	2	1.83	15.1	53	3	64.6	0.36	14.4	5	2	58.2	2
MT8849		58.6	37.7	68	2	1.70	12.8	71	2	66.7	0.34	11.8	5	1	53.2	2
BW152		56.0	31.3	46	2	1.67	13.5	61	2	67.6	0.38	12.3	5	2	53.5	2
8601AE3C		60.1	33.3	62	2	1.64	12.7	61	2	69.5	0.38	11.6	5	2	54.6	2
BZ988-351		55.0	26.7	34	6	1.67	13.5	45	2	65.5	0.29	12.8	5	2	56.2	2
BZ984-334		55.4	34.5	60	2	1.75	12.7	56	1	65.0	0.34	11.9	5	1	55.3	2

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=MONTANA STATION=SIDNEY NURSERY=UNIFORM

TABLE 17 CONTD

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		53.8	4.25	5	8.0	7.5	176	2	1.7	MI	MJ		MJ			MJ		MI	MJ		MI		MI	
CHRIS		55.3	3.50	7	8.0	7.5	186	2	2.3	MI	MJ		MI			MI		MI	MJ				MI	
ERA	S	53.5	5.00	5	8.0	8.0	178	2	2.0	MI	MI		MJ			MJ		MI	MJ		MI			
STOA	S	56.9	4.50	5	8.0	8.0	198	2	2.3	MI			MI			MJ		MI	MJ		MI			
BUTTE86	S	55.0	3.50	5	8.0	8.0	174	2	1.7	MJ			MJ			MJ		MI	MJ		MI			
SD8072		54.3	4.00	5	8.0	7.5	177	1	1.7	MI			MJ			MJ		MJ	MJ		MI		MI	
SD8073		56.2	4.50	5	8.0	8.0	179	2	1.7	MJ			MJ			MJ		MI	MJ		MI			
SD8070		58.2	4.00	9	8.0	8.0	202	2	2.3				MI			MJ			MJ					
SD0005		57.6	5.00	7	8.0	7.5	186	2	2.0				MJ			MJ			MJ				MI	
SD0010		57.3	4.50	7	8.0	7.5	187	2	1.7	MJ			MJ			MJ		MI	MJ				MI	
MN89103		54.6	3.25	5	8.0	8.0	170	1	1.7	MI			MJ			MJ		MJ	MJ		MI			
MN90071		57.6	3.75	7	8.5	7.5	195	2	2.0	MI			MJ			MJ		MI	MJ				MI	
MN90114		54.3	3.50	4	8.5	8.0	166	1	1.3	MI			MJ	MI		MJ		MJ	MJ		MJ			
MN90253		55.0	5.00	2	8.0	8.0	185	1	1.3	MJ			MJ			MJ		MI	MJ		MJ			
SBE0437		55.0	5.25	7	8.5	8.0	193	2	2.0				MJ			MJ		MI	MJ					
SBE0444		55.0	3.75	7	8.5	7.5	182	1	1.7	MI			MJ			MJ		MJ	MJ				MI	
ND671		57.9	3.50	7	8.0	8.0	204	2	2.3				MI			MJ		MI	MJ					
ND673		55.0	5.50	7	8.5	7.0	195	2	2.0				MJ			MJ		MI	MJ				MI	
ND674		57.6	5.50	9	8.0	7.5	202	2	3.3										MJ				MI	
ND677		56.9	4.75	9	8.0	7.5	205	2	3.3									MI	MJ				MI	
ND678		56.5	4.00	9	8.5	7.5	187	2	2.0				MI	MI		MJ		MI	MJ				MI	
XW398A4		56.2	5.75	9	8.0	7.5	197	1	2.0	MI			MI			MJ		MI	MJ	MI			MI	
N86-0348		56.9	3.50	7	8.0	7.5	195	2	2.0	MI			MJ			MJ		MI	MJ				MI	
N90-0666		59.0	4.00	9	8.5	7.5	200	2	2.3	MI			MI			MJ			MJ				MI	
N90-0671		52.6	6.00	2	8.0	7.0	172	1	1.3	MJ			MJ			MJ		MI	MJ	MI	MJ		MI	
N90-0700		55.3	5.00	2	8.0	8.0	184	1	1.0	MJ	MI		MJ	MI		MJ		MI	MJ		MJ			
N88-3140		58.2	3.25	9	8.5	7.0	218	2	2.3	MJ				MJ				MI	MJ				MI	
MT8849		53.2	9.00	4	8.0	7.0	161	1	1.3				MJ	MI		MJ		MI	MJ	MJ	MJ		MI	MI
BW152		53.5	4.25	2	8.0	7.0	176	1	1.7	MJ			MI			MJ		MI	MJ		MJ		MI	
8601AE3C		54.6	4.00	2	8.0	8.0	185	1	1.7				MJ			MJ		MI	MJ		MJ			
BZ988-351		56.2	4.00	2	8.0	8.0	175	1	1.7	MJ	MI		MI	MI		MI		MI	MJ		MJ			
BZ984-334		55.3	4.50	2	8.5	7.5	193	1	1.0	MJ			MJ	MJ		MJ		MI	MJ		MJ		MI	

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	29.1	8	13.9	67.3	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	162
MAJOR FAULTING VALUES	56.9	26.1	18	12.9	65.3	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	152

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 18 STATE=WYOMING STATION=POWELL NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
CHRIS#13		62.0	37.2	76	0	1.56	12.5	80	2	67.3	0.39	11.6	5	2	53.2	1
CHRIS#14		60.9	33.2	62	1	1.57	12.7	73	2	68.0	0.37	12.2	5	2	53.8	1
ERA	S	60.3	34.2	70	1	1.53	11.0	71	2	69.9	0.37	9.8	5	2	51.6	1
STOA	S	60.9	33.6	81	2	1.65	12.0	69	2	69.2	0.38	11.1	5	2	56.2	1
BUTTE86	S	62.2	40.8	78	1	1.57	12.8	79	2	67.5	0.38	11.5	5	2	56.2	1
SD8072		61.6	38.8	80	1	1.61	11.8	72	2	68.7	0.38	11.0	5	2	53.8	1
SD8073		60.5	39.2	81	1	1.64	11.1	71	2	68.0	0.39	10.0	5	2	53.5	1
SD8070		62.7	40.2	79	0	1.62	12.0	80	2	67.5	0.37	10.6	5	2	52.6	1
SD0005		60.6	36.8	75	1	1.58	10.8	76	2	67.9	0.37	9.9	5	2	52.9	1
SD0010		61.6	36.0	65	1	1.61	12.2	73	2	69.5	0.32	11.1	5	2	54.6	1
MN89103		60.5	33.9	49	2	1.50	11.8	85	2	67.3	0.35	11.0	5	2	53.5	1
MN90071		62.0	39.7	79	1	1.53	11.9	82	2	68.8	0.36	10.9	5	2	54.6	1
MN90114		62.4	38.9	82	1	1.57	12.3	85	2	66.2	0.41	10.7	5	1	53.8	1
MN90253		61.8	34.0	73	1	1.54	12.1	77	2	68.3	0.38	11.2	5	2	52.9	1
SBE0437		61.9	39.2	75	1	1.56	11.8	79	2	68.9	0.37	10.9	5	2	53.2	1
SBE0444		60.6	40.7	80	1	1.56	11.2	70	2	70.0	0.36	10.6	5	2	51.9	1
ND671		59.8	37.9	71	2	1.59	10.4	81	2	67.3	0.43	8.9	5	2	50.2	1
ND673		62.7	39.2	76	1	1.62	12.4	76	2	67.8	0.33	11.6	5	2	56.2	1
ND674		63.5	37.2	69	1	1.64	13.0	85	3	67.3	0.39	12.3	5	2	57.6	1
ND677		62.4	37.9	72	1	1.59	12.3	65	2	67.8	0.38	11.5	5	2	52.6	1
ND678		62.6	33.4	51	2	1.56	12.2	79	2	67.5	0.36	11.1	5	2	53.2	1
XW398A4		61.5	41.2	79	1	1.60	11.6	70	2	67.0	0.43	11.0	5	2	52.9	1
N86-0348		61.9	38.5	76	1	1.63	11.8	75	2	65.8	0.41	10.6	5	1	52.6	1
N90-0666		60.2	37.9	80	1	1.61	11.8	75	2	67.5	0.41	11.2	5	2	53.2	1
N90-0671		60.2	37.0	76	1	1.60	11.8	73	2	66.9	0.42	10.6	5	2	52.9	1
N90-0700		61.5	32.7	51	2	1.47	13.1	83	3	62.9	0.40	12.4	5	1	56.2	1
N88-3140		60.1	41.0	83	1	1.59	12.8	70	2	67.8	0.38	11.9	5	2	51.9	1
MT8849		62.3	41.8	80	0	1.57	12.2	83	2	65.8	0.39	11.1	5	1	54.6	1
BW152		61.9	36.9	70	1	1.57	12.4	77	2	67.1	0.38	11.1	5	2	50.8	1
8601AE3C		62.3	42.2	84	1	1.44	12.3	71	2	67.7	0.42	11.5	5	2	52.6	1
BZ988-351		61.0	35.5	63	2	1.54	11.8	82	2	67.3	0.36	11.1	5	2	53.2	1
BZ984-334		60.8	43.1	87	2	1.68	12.5	67	2	66.7	0.42	11.9	5	1	53.8	1
ND675		63.0	39.8	78	1	1.57	12.1	86	2	68.5	0.37	11.1	5	2	55.0	1
MN89028		62.8	39.4	75	1	1.49	12.1	76	2	67.6	0.38	11.3	5	2	54.3	1
MN82354		60.6	38.9	77	1	1.55	11.3	67	2	68.9	0.39	9.8	5	2	49.6	1
MN89408		62.0	39.1	75	1	1.50	12.4	68	2	68.2	0.35	11.5	5	2	53.5	1
N88-0022		61.0	42.7	85	0	1.52	11.6	72	2	68.7	0.39	10.8	5	2	52.2	1
WP906		60.1	44.1	79	1	1.67	12.6	65	2	67.9	0.42	11.8	5	2	53.5	1
NEWANA		62.0	38.0	75	1	1.45	11.6	68	2	64.1	0.38	10.3	5	1	52.2	1

TABLE 18 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=WYOMING STATION=POWELL NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
CHRIS#13		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
CHRIS#14		0.0	0.00	0	0.0	0.0	0				MI		MJ			MJ		MJ						
ERA	S	0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
STOA	S	0.0	0.00	0	0.0	0.0	0				MI		MJ			MJ		MJ						
BUTTE86	S	0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
SD8072		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
SD8073		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
SD8070		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
SD0005		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
SD0010		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
MN89103		0.0	0.00	0	0.0	0.0	0				MI		MJ			MJ		MJ						
MN90071		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
MN90114		0.0	0.00	0	0.0	0.0	0						MJ	MI		MJ		MJ						
MN90253		0.0	0.00	0	0.0	0.0	0				MI		MJ			MJ		MJ						
SBE0437		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
SBE0444		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
ND671		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
ND673		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
ND674		0.0	0.00	0	0.0	0.0	0						MI			MJ		MJ						
ND677		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
ND678		0.0	0.00	0	0.0	0.0	0				MI		MJ			MJ		MJ						
XW398A4		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
N86-0348		0.0	0.00	0	0.0	0.0	0						MJ	MI		MJ		MJ						
N90-0666		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
N90-0671		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
N90-0700		0.0	0.00	0	0.0	0.0	0				MI		MI	MJ		MJ		MJ						
N88-3140		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
MT8849		0.0	0.00	0	0.0	0.0	0						MJ	MI		MJ		MJ						
BW152		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
8601AE3C		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
BZ988-351		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
BZ984-334		0.0	0.00	0	0.0	0.0	0						MJ	MI		MJ		MJ						
ND675		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
MN89028		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
MN82354		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
MN89408		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
N88-0022		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
WP906		0.0	0.00	0	0.0	0.0	0						MJ			MJ		MJ						
NEWANA		0.0	0.00	0	0.0	0.0	0						MJ	MJ		MJ		MJ						

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	34.1	8	13.9	66.8	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	-21
MAJOR FAULTING VALUES	56.9	31.1	18	12.9	64.8	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	-31

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

Table 19

BUTTE86 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.10	1.35	56.50	59.80	3.30
1000 Ker. Wt.	35.65	1.48	34.00	36.90	2.90
Wht.Protein 14%	13.55	1.08	12.50	14.80	2.30
Wht. Ash 14%	1.54	0.14	1.36	1.70	0.34
Hardness	71.50	14.15	59.00	90.00	31.00
Extraction	67.35	1.30	65.90	68.80	2.90
Fl. Ash @ 65%	0.32	0.03	0.29	0.35	0.06
Fl. Protein 14%	11.93	1.20	10.90	13.20	2.30
Mix Pattern	2.00	0.00	2.00	2.00	0.00
Bake Abs.	57.15	2.75	54.60	60.00	5.40
Loaf Vol.	177.25	10.72	169.00	193.00	24.00

BW152 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.63	1.69	56.00	59.90	3.90
1000 Ker. Wt.	31.53	1.46	29.60	33.00	3.40
Wht.Protein 14%	14.05	0.75	13.30	14.70	1.40
Wht. Ash 14%	1.57	0.12	1.40	1.67	0.27
Hardness	69.25	13.96	58.00	89.00	31.00
Extraction	67.12	0.92	66.00	68.10	2.10
Fl. Ash @ 65%	0.35	0.03	0.32	0.38	0.06
Fl. Protein 14%	12.90	1.07	11.70	13.90	2.20
Mix Pattern	1.50	0.58	1.00	2.00	1.00
Bake Abs.	54.98	2.11	52.90	57.30	4.40
Loaf Vol.	177.50	17.48	154.00	195.00	41.00

BZ984-334 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	55.13	3.29	50.40	57.60	7.20
1000 Ker. Wt.	33.33	5.30	25.60	37.50	11.90
Wht.Protein 14%	13.38	1.15	12.30	14.90	2.60
Wht. Ash 14%	1.73	0.19	1.58	1.99	0.41
Hardness	48.00	7.83	38.00	56.00	18.00
Extraction	64.33	3.24	59.80	67.50	7.70
Fl. Ash @ 65%	0.38	0.06	0.34	0.47	0.13
Fl. Protein 14%	12.60	1.13	11.50	14.00	2.50
Mix Pattern	2.00	0.82	1.00	3.00	2.00
Bake Abs.	55.63	2.67	52.90	59.30	6.40
Loaf Vol.	193.00	16.67	170.00	209.00	39.00

BZ988-351 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	54.75	4.66	48.20	59.00	10.80
1000 Ker. Wt.	27.17	4.82	20.60	31.50	10.90
Wht.Protein 14%	13.95	1.33	12.90	15.90	3.00
Wht. Ash 14%	1.65	0.19	1.50	1.92	0.42
Hardness	54.25	15.20	38.00	70.00	32.00
Extraction	63.50	4.14	58.00	67.60	9.60
Fl. Ash @ 65%	0.33	0.05	0.29	0.41	0.12
Fl. Protein 14%	14.50	3.12	11.70	18.80	7.10
Mix Pattern	2.00	0.82	1.00	3.00	2.00
Bake Abs.	56.63	2.70	53.80	60.30	6.50
Loaf Vol.	177.75	21.72	152.00	205.00	53.00

Statistical Evaluation of Samples from Central Region

Table 20

CHRIS n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.18	1.84	57.20	61.60	4.40
1000 Ker. Wt.	27.78	1.98	25.30	30.10	4.80
Wht.Protein 14%	14.20	0.73	13.30	14.80	1.50
Wht. Ash 14%	1.55	0.08	1.48	1.66	0.18
Hardness	65.75	5.80	58.00	72.00	14.00
Extraction	64.73	4.55	58.80	68.90	10.10
Fl. Ash @ 65%	0.33	0.02	0.31	0.35	0.04
Fl. Protein 14%	13.45	0.70	12.70	14.10	1.40
Mix Pattern	2.00	0.00	2.00	2.00	0.00
Bake Abs.	56.88	2.25	54.60	59.00	4.40
Loaf Vol.	176.75	12.09	159.00	186.00	27.00

ERA n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.45	2.25	56.70	61.70	5.00
1000 Ker. Wt.	29.28	2.32	27.00	32.50	5.50
Wht.Protein 14%	12.43	0.68	11.80	13.30	1.50
Wht. Ash 14%	1.56	0.12	1.40	1.67	0.27
Hardness	69.50	15.95	52.00	84.00	32.00
Extraction	67.83	2.38	64.30	69.50	5.20
Fl. Ash @ 65%	0.35	0.04	0.31	0.40	0.09
Fl. Protein 14%	11.15	0.58	10.60	11.90	1.30
Mix Pattern	1.75	0.50	1.00	2.00	1.00
Bake Abs.	54.50	1.88	52.60	56.90	4.30
Loaf Vol.	177.75	23.67	154.00	210.00	56.00

MARQUIS n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.13	1.76	57.00	61.30	4.30
1000 Ker. Wt.	29.60	5.73	21.60	33.80	12.20
Wht.Protein 14%	12.93	0.75	12.20	13.90	1.70
Wht. Ash 14%	1.57	0.11	1.41	1.68	0.27
Hardness	71.00	11.20	61.00	87.00	26.00
Extraction	65.87	1.83	63.90	68.00	4.10
Fl. Ash @ 65%	0.37	0.02	0.34	0.40	0.06
Fl. Protein 14%	11.80	0.63	11.20	12.60	1.40
Mix Pattern	2.00	0.82	1.00	3.00	2.00
Bake Abs.	55.88	2.43	53.80	59.30	5.50
Loaf Vol.	176.75	11.32	169.00	193.00	24.00

MN89103 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.48	1.73	55.80	59.90	4.10
1000 Ker. Wt.	29.80	2.21	27.10	32.50	5.40
Wht.Protein 14%	12.98	0.81	12.10	13.80	1.70
Wht. Ash 14%	1.49	0.12	1.32	1.58	0.26
Hardness	81.00	16.06	66.00	99.00	33.00
Extraction	67.28	0.94	66.40	68.60	2.20
Fl. Ash @ 65%	0.32	0.03	0.29	0.35	0.06
Fl. Protein 14%	11.80	1.01	10.80	12.90	2.10
Mix Pattern	1.25	0.50	1.00	2.00	1.00
Bake Abs.	55.90	2.19	53.50	57.90	4.40
Loaf Vol.	182.50	12.48	170.00	196.00	26.00

Statistical Evaluation of Samples from Central Region

Table 21

MN90071 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.23	1.33	57.80	60.50	2.70
1000 Ker. Wt.	38.28	4.41	34.50	44.60	10.10
Wht.Protein 14%	13.53	1.32	12.10	14.70	2.60
Wht. Ash 14%	1.54	0.08	1.47	1.65	0.18
Hardness	72.00	8.04	60.00	77.00	17.00
Extraction	68.30	1.36	66.40	69.60	3.20
Fl. Ash @ 65%	0.33	0.01	0.32	0.35	0.03
Fl. Protein 14%	12.33	1.45	10.70	13.60	2.90
Mix Pattern	2.00	0.82	1.00	3.00	2.00
Bake Abs.	58.05	3.13	53.80	60.50	6.70
Loaf Vol.	187.00	17.76	162.00	203.00	41.00

MN90114 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.28	1.36	56.60	59.70	3.10
1000 Ker. Wt.	35.28	2.40	32.40	38.20	5.80
Wht.Protein 14%	13.30	0.83	12.40	14.30	1.90
Wht. Ash 14%	1.57	0.13	1.38	1.66	0.28
Hardness	80.50	15.09	63.00	95.00	32.00
Extraction	65.28	1.11	64.50	66.90	2.40
Fl. Ash @ 65%	0.40	0.03	0.37	0.43	0.06
Fl. Protein 14%	11.35	0.90	10.50	12.50	2.00
Mix Pattern	1.50	0.58	1.00	2.00	1.00
Bake Abs.	56.00	2.65	53.20	58.60	5.40
Loaf Vol.	175.25	10.63	166.00	188.00	22.00

MN90253 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.80	1.99	56.00	60.30	4.30
1000 Ker. Wt.	35.50	3.22	32.70	39.20	6.50
Wht.Protein 14%	12.88	1.01	12.00	14.10	2.10
Wht. Ash 14%	1.59	0.18	1.35	1.73	0.38
Hardness	55.50	17.18	41.00	80.00	39.00
Extraction	65.48	1.84	63.10	67.60	4.50
Fl. Ash @ 65%	0.35	0.05	0.29	0.40	0.11
Fl. Protein 14%	11.88	0.81	11.00	12.70	1.70
Mix Pattern	2.00	0.82	1.00	3.00	2.00
Bake Abs.	56.13	3.34	51.90	59.00	7.10
Loaf Vol.	177.25	28.22	137.00	203.00	66.00

MT8849 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.08	0.88	58.20	60.20	2.00
1000 Ker. Wt.	37.45	0.44	36.80	37.70	0.90
Wht.Protein 14%	13.53	0.69	12.80	14.30	1.50
Wht. Ash 14%	1.62	0.12	1.45	1.70	0.25
Hardness	70.00	7.07	62.00	79.00	17.00
Extraction	65.87	1.20	64.80	67.10	2.30
Fl. Ash @ 65%	0.34	0.03	0.32	0.38	0.06
Fl. Protein 14%	12.33	0.51	11.80	12.90	1.10
Mix Pattern	2.50	0.58	2.00	3.00	1.00
Bake Abs.	55.60	3.18	52.60	59.00	6.40
Loaf Vol.	176.00	27.94	145.00	206.00	61.00

Statistical Evaluation of Samples from Central Region

Table 22

	ND671 n=4					ND673 n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.50	1.00	58.60	60.90	2.30	59.83	1.41	58.90	61.90	3.00
1000 Ker. Wt.	33.25	2.86	29.80	36.80	7.00	36.70	1.88	35.20	39.40	4.20
Wht.Protein 14%	14.13	1.06	13.00	15.50	2.50	13.48	0.90	12.70	14.70	2.00
Wht. Ash 14%	1.59	0.14	1.39	1.71	0.32	1.54	0.15	1.34	1.68	0.34
Hardness	67.25	5.74	60.00	74.00	14.00	65.25	7.63	56.00	72.00	16.00
Extraction	67.62	1.12	66.70	69.10	2.40	68.73	0.40	68.40	69.30	0.90
Fl. Ash @ 65%	0.31	0.03	0.28	0.35	0.07	0.32	0.03	0.29	0.35	0.06
Fl. Protein 14%	13.30	1.30	12.10	14.90	2.80	12.40	1.06	11.40	13.70	2.30
Mix Pattern	2.00	0.82	1.00	3.00	2.00	2.50	0.58	2.00	3.00	1.00
Bake Abs.	58.80	1.96	56.50	60.80	4.30	56.90	2.62	54.30	59.30	5.00
Loaf Vol.	198.75	13.20	179.00	206.00	27.00	189.00	17.57	169.00	210.00	41.00

	ND674 n=4					ND677 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.95	0.89	59.00	61.10	2.10	59.38	0.81	58.50	60.20	1.70
1000 Ker. Wt.	32.93	1.87	30.40	34.70	4.30	34.20	1.43	32.80	36.20	3.40
Wht.Protein 14%	14.43	0.90	13.30	15.40	2.10	13.95	0.45	13.30	14.30	1.00
Wht. Ash 14%	1.62	0.07	1.52	1.68	0.16	1.56	0.16	1.34	1.69	0.35
Hardness	73.50	9.47	63.00	82.00	19.00	52.75	7.68	47.00	64.00	17.00
Extraction	67.20	0.97	66.50	68.60	2.10	67.75	0.58	67.20	68.30	1.10
Fl. Ash @ 65%	0.36	0.02	0.34	0.37	0.03	0.32	0.02	0.30	0.34	0.04
Fl. Protein 14%	13.58	1.20	12.10	14.70	2.60	13.00	0.74	12.10	13.90	1.80
Mix Pattern	3.50	1.00	2.00	4.00	2.00	2.00	0.00	2.00	2.00	0.00
Bake Abs.	58.40	2.94	54.60	61.10	6.50	57.53	2.25	54.60	59.30	4.70
Loaf Vol.	202.75	14.86	182.00	214.00	32.00	195.75	15.86	173.00	208.00	35.00

Statistical Evaluation of Samples from Central Region

Table 23

	ND678 n=4					N86-0348 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.73	0.88	59.80	61.90	2.10	58.00	1.17	56.60	59.40	2.80
1000 Ker. Wt.	31.35	1.53	29.80	33.40	3.60	31.67	2.51	28.20	34.20	6.00
Wht.Protein 14%	13.90	0.93	12.90	15.00	2.10	13.33	0.97	12.30	14.20	1.90
Wht. Ash 14%	1.51	0.12	1.34	1.62	0.28	1.63	0.10	1.48	1.69	0.21
Hardness	73.25	5.44	66.00	79.00	13.00	60.75	14.29	49.00	78.00	29.00
Extraction	66.05	1.64	64.20	67.80	3.60	67.35	0.84	66.10	67.90	1.80
Fl. Ash @ 65%	0.32	0.02	0.30	0.33	0.03	0.37	0.02	0.35	0.40	0.05
Fl. Protein 14%	12.43	1.09	11.10	13.50	2.40	12.40	1.22	11.20	13.50	2.30
Mix Pattern	2.25	0.50	2.00	3.00	1.00	1.75	0.50	1.00	2.00	1.00
Bake Abs.	57.25	2.90	53.50	60.00	6.50	56.75	2.52	53.20	59.00	5.80
Loaf Vol.	185.50	14.80	166.00	202.00	36.00	188.50	13.96	168.00	199.00	31.00

	N88-3140 n=4					N90-0666 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.35	2.06	54.70	59.60	4.90	57.68	1.07	56.60	59.10	2.50
1000 Ker. Wt.	33.75	2.43	30.70	36.20	5.50	33.38	1.49	31.80	34.70	2.90
Wht.Protein 14%	14.75	0.74	13.70	15.40	1.70	13.78	0.56	13.30	14.40	1.10
Wht. Ash 14%	1.66	0.14	1.49	1.83	0.34	1.59	0.10	1.44	1.66	0.22
Hardness	64.25	10.24	53.00	77.00	24.00	71.50	11.90	61.00	85.00	24.00
Extraction	48.18	32.12	0.00	64.80	64.80	68.73	1.37	67.80	70.70	2.90
Fl. Ash @ 65%	0.25	0.17	0.00	0.36	0.36	0.35	0.02	0.33	0.38	0.05
Fl. Protein 14%	10.25	6.88	0.00	14.40	14.40	12.80	0.59	12.20	13.40	1.20
Mix Pattern	1.25	0.96	0.00	2.00	2.00	2.75	0.50	2.00	3.00	1.00
Bake Abs.	57.27	1.97	55.00	58.60	3.60	58.30	2.22	55.00	59.60	4.60
Loaf Vol.	192.00	27.62	163.00	218.00	55.00	191.00	19.65	163.00	208.00	45.00

Statistical Evaluation of Samples from Central Region

Table 24

	N90-0671 n=4					N90-0700 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.85	1.66	56.70	60.30	3.60	56.70	1.38	55.30	58.40	3.10
1000 Ker. Wt.	32.25	1.20	31.30	34.00	2.70	27.85	2.83	23.90	30.30	6.40
Wht.Protein 14%	12.65	0.74	12.00	13.70	1.70	13.23	0.61	12.60	13.80	1.20
Wht. Ash 14%	1.52	0.10	1.38	1.60	0.22	1.52	0.10	1.39	1.64	0.25
Hardness	66.00	7.16	56.00	73.00	17.00	68.50	6.56	60.00	75.00	15.00
Extraction	67.98	0.84	67.30	69.20	1.90	49.13	32.78	0.00	67.10	67.10
Fl. Ash @ 65%	0.37	0.05	0.33	0.43	0.10	0.26	0.17	0.00	0.36	0.36
Fl. Protein 14%	11.20	0.57	10.70	12.00	1.30	8.83	5.93	0.00	12.70	12.70
Mix Pattern	1.75	0.50	1.00	2.00	1.00	1.50	1.29	0.00	3.00	3.00
Bake Abs.	53.10	2.20	50.50	55.80	5.30	55.57	2.51	53.20	58.20	5.00
Loaf Vol.	165.25	19.24	138.00	183.00	45.00	178.00	19.70	156.00	194.00	38.00

	SBE0437 n=4					SBE0444 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.33	1.45	57.00	60.40	3.40	58.33	1.11	57.40	59.90	2.50
1000 Ker. Wt.	33.75	1.36	32.30	35.50	3.20	34.40	2.47	31.50	37.50	6.00
Wht.Protein 14%	13.10	0.50	12.60	13.70	1.10	12.75	0.70	12.00	13.60	1.60
Wht. Ash 14%	1.52	0.10	1.38	1.58	0.20	1.55	0.12	1.38	1.65	0.27
Hardness	68.25	9.03	59.00	80.00	21.00	55.00	8.12	45.00	63.00	18.00
Extraction	68.87	1.26	67.60	70.60	3.00	70.03	1.26	68.80	71.30	2.50
Fl. Ash @ 65%	0.33	0.03	0.29	0.35	0.06	0.33	0.03	0.29	0.36	0.07
Fl. Protein 14%	11.83	0.56	11.20	12.50	1.30	11.88	0.85	10.80	12.80	2.00
Mix Pattern	2.00	0.00	2.00	2.00	0.00	1.50	0.58	1.00	2.00	1.00
Bake Abs.	56.53	2.19	54.30	58.60	4.30	55.85	1.95	53.50	57.60	4.10
Loaf Vol.	191.50	9.15	179.00	201.00	22.00	177.25	13.05	158.00	187.00	29.00

Statistical Evaluation of Samples from Central Region

Table 25

SD0005 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.90	1.49	57.40	60.90	3.50
1000 Ker. Wt.	34.35	1.24	32.80	35.50	2.70
Wht.Protein 14%	12.75	0.52	12.00	13.10	1.10
Wht. Ash 14%	1.47	0.12	1.30	1.57	0.27
Hardness	67.50	6.35	59.00	74.00	15.00
Extraction	69.15	2.92	65.30	72.10	6.80
Fl. Ash @ 65%	0.30	0.03	0.27	0.33	0.06
Fl. Protein 14%	11.55	0.48	10.90	12.00	1.10
Mix Pattern	2.25	0.50	2.00	3.00	1.00
Bake Abs.	56.75	1.49	54.60	57.90	3.30
Loaf Vol.	181.50	5.20	174.00	186.00	12.00

SD0010 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	57.23	1.82	55.40	59.50	4.10
1000 Ker. Wt.	32.08	4.41	26.00	36.00	10.00
Wht.Protein 14%	13.38	1.05	12.50	14.60	2.10
Wht. Ash 14%	1.57	0.11	1.42	1.66	0.24
Hardness	65.00	9.63	53.00	76.00	23.00
Extraction	68.40	0.81	67.60	69.40	1.80
Fl. Ash @ 65%	0.31	0.03	0.28	0.35	0.07
Fl. Protein 14%	12.03	1.22	10.90	13.40	2.50
Mix Pattern	2.50	0.58	2.00	3.00	1.00
Bake Abs.	58.55	4.35	53.20	63.40	10.20
Loaf Vol.	188.50	24.15	156.00	213.00	57.00

SD8070 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.58	0.87	58.60	60.60	2.00
1000 Ker. Wt.	34.95	0.77	34.20	36.00	1.80
Wht.Protein 14%	13.58	0.69	12.80	14.30	1.50
Wht. Ash 14%	1.52	0.15	1.32	1.68	0.36
Hardness	69.50	8.35	59.00	79.00	20.00
Extraction	67.53	2.05	64.60	69.10	4.50
Fl. Ash @ 65%	0.32	0.02	0.29	0.34	0.05
Fl. Protein 14%	12.18	0.88	11.20	13.10	1.90
Mix Pattern	2.00	0.82	1.00	3.00	2.00
Bake Abs.	57.03	2.15	53.80	58.20	4.40
Loaf Vol.	189.50	15.55	167.00	202.00	35.00

SD8072 n=4

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.73	1.12	57.20	59.70	2.50
1000 Ker. Wt.	34.63	1.03	33.20	35.60	2.40
Wht.Protein 14%	12.93	0.81	12.30	14.00	1.70
Wht. Ash 14%	1.58	0.12	1.42	1.69	0.27
Hardness	67.50	9.68	59.00	79.00	20.00
Extraction	68.70	1.41	66.90	70.20	3.30
Fl. Ash @ 65%	0.35	0.03	0.31	0.37	0.06
Fl. Protein 14%	11.68	0.90	10.90	12.80	1.90
Mix Pattern	1.50	0.58	1.00	2.00	1.00
Bake Abs.	55.68	2.66	52.60	57.90	5.30
Loaf Vol.	174.25	14.50	153.00	184.00	31.00

Statistical Evaluation of Samples from Central Region

Table 26

	SD8073 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.35	1.42	56.40	59.80	3.40
1000 Ker. Wt.	34.83	1.86	32.50	36.60	4.10
Wht.Protein 14%	13.13	1.05	11.90	14.10	2.20
Wht. Ash 14%	1.56	0.15	1.36	1.72	0.36
Hardness	74.50	12.61	61.00	88.00	27.00
Extraction	67.75	1.77	65.20	69.00	3.80
Fl. Ash @ 65%	0.36	0.03	0.32	0.39	0.07
Fl. Protein 14%	11.95	1.21	10.50	13.00	2.50
Mix Pattern	2.50	0.58	2.00	3.00	1.00
Bake Abs.	57.63	2.41	55.00	60.00	5.00
Loaf Vol.	173.00	12.25	155.00	182.00	27.00

	STOA n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.08	1.34	57.00	60.00	3.00
1000 Ker. Wt.	31.55	1.83	29.10	33.00	3.90
Wht.Protein 14%	13.68	0.43	13.30	14.30	1.00
Wht. Ash 14%	1.60	0.17	1.37	1.74	0.37
Hardness	68.50	8.39	60.00	80.00	20.00
Extraction	67.93	1.30	66.80	69.80	3.00
Fl. Ash @ 65%	0.31	0.03	0.28	0.33	0.05
Fl. Protein 14%	12.65	0.49	12.10	13.20	1.10
Mix Pattern	2.25	0.50	2.00	3.00	1.00
Bake Abs.	57.75	0.98	56.90	58.60	1.70
Loaf Vol.	192.25	16.05	176.00	212.00	36.00

	XW398A4 n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.85	1.30	57.00	59.90	2.90
1000 Ker. Wt.	37.80	2.83	33.70	40.20	6.50
Wht.Protein 14%	13.33	0.62	12.80	14.20	1.40
Wht. Ash 14%	1.62	0.13	1.44	1.72	0.28
Hardness	62.25	10.14	48.00	70.00	22.00
Extraction	68.53	1.42	67.20	70.20	3.00
Fl. Ash @ 65%	0.36	0.04	0.32	0.39	0.07
Fl. Protein 14%	12.50	0.66	11.80	13.40	1.60
Mix Pattern	2.25	0.50	2.00	3.00	1.00
Bake Abs.	57.35	2.21	55.00	60.00	5.00
Loaf Vol.	189.50	15.72	175.00	208.00	33.00

	8601AE3C n=4				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.58	1.50	59.60	62.80	3.20
1000 Ker. Wt.	35.35	2.29	33.30	38.50	5.20
Wht.Protein 14%	13.70	0.88	12.70	14.70	2.00
Wht. Ash 14%	1.53	0.12	1.37	1.64	0.27
Hardness	62.75	5.85	56.00	70.00	14.00
Extraction	68.18	1.90	66.30	70.10	3.80
Fl. Ash @ 65%	0.35	0.03	0.32	0.38	0.06
Fl. Protein 14%	12.65	0.88	11.60	13.70	2.10
Mix Pattern	2.25	0.50	2.00	3.00	1.00
Bake Abs.	56.85	2.78	54.60	60.30	5.70
Loaf Vol.	191.75	16.56	174.00	213.00	39.00

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 27 STATE=MONTANA STATION=BOZEMAN NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		59.3	34.7	69	1	1.50	12.9	82	2	62.2	0.46	11.5	5	2	56.2	2
CHRIS		54.9	27.2	43	4	1.60	13.9	66	1	59.6	0.41	12.9	5	1	57.6	3
ERA	S	55.5	29.2	57	2	1.49	11.2	77	1	61.2	0.47	9.7	5	1	53.2	2
STOA	S	58.4	33.3	66	2	1.56	12.9	81	2	64.9	0.39	11.7	5	2	57.6	2
BUTTE86	S	59.7	38.9	82	1	1.52	12.9	87	2	66.1	0.33	11.9	5	2	59.6	3
SD8072		56.9	32.4	66	2	1.62	12.7	73	1	63.9	0.43	11.3	5	2	56.2	3
SD8073		58.8	36.0	76	2	1.51	12.4	89	2	64.3	0.42	11.3	5	2	58.6	3
SD8070		59.5	35.5	69	2	1.54	12.3	76	2	65.5	0.37	10.9	5	2	56.2	2
SD0005		57.0	36.5	79	0	1.50	12.0	83	2	63.7	0.42	10.3	5	2	57.3	3
SD0010		58.2	37.3	78	1	1.60	12.7	86	2	68.4	0.34	11.4	5	2	57.3	3
MN89103		54.4	31.9	53	3	1.49	12.0	76	1	61.0	0.41	10.6	5	1	55.8	2
MN90071		59.1	41.8	86	1	1.48	12.9	89	2	65.9	0.37	12.0	5	2	57.9	3
MN90114		56.1	41.3	84	1	1.57	12.6	87	1	59.5	0.46	10.9	5	1	55.8	2
MN90253		60.0	43.1	83	1	1.58	11.9	67	2	64.4	0.34	11.1	5	2	56.2	3
SBE0437		57.7	40.7	83	0	1.51	12.8	86	2	64.0	0.41	10.9	5	2	61.4	3
SBE0444		57.5	37.6	81	1	1.55	12.0	66	2	64.7	0.37	10.6	5	2	59.0	3
ND671		60.3	35.7	69	1	1.61	13.6	75	3	66.1	0.38	13.3	5	4	61.4	3
ND673		58.2	36.1	69	2	1.51	12.5	79	2	64.6	0.41	11.1	5	2	59.3	3
ND674		59.0	34.8	80	1	1.53	13.1	79	3	61.9	0.41	12.4	5	1	59.6	4
ND677		55.2	28.2	41	4	1.67	12.8	61	1	60.6	0.48	11.9	5	1	58.6	2
ND678		60.3	33.2	54	2	1.39	12.8	77	2	65.4	0.32	11.4	5	2	57.9	3
XW398A4		58.5	43.7	88	1	1.56	12.2	73	2	65.5	0.39	11.2	5	2	58.6	4
N86-0348		57.4	37.6	81	1	1.58	12.4	78	2	60.9	0.45	10.8	5	1	59.3	4
N90-0666		58.0	39.5	84	1	1.56	12.3	81	2	65.0	0.41	10.5	5	2	59.6	4
N90-0671		57.5	37.7	82	1	1.54	10.9	99	2	62.4	0.42	9.9	5	2	55.3	3
N90-0700		58.6	33.4	66	1	1.41	13.1	85	3	63.9	0.38	12.2	5	2	60.0	3
N88-3140		58.6	41.7	87	0	1.51	13.7	78	3	64.7	0.38	12.5	5	3	61.1	1
MT8849		53.0	34.2	64	2	1.69	12.3	81	1	58.7	0.48	10.8	4	1	58.2	4
BW152		59.0	36.0	72	2	1.50	12.9	87	2	64.9	0.43	11.1	5	2	56.5	1
8601AE3C		55.7	31.2	56	2	1.57	12.9	70	1	58.8	0.47	11.8	4	1	57.6	3
BZ988-351		0.0	0.0	0	0	0.00	0.0	0	1	0.0	0.00	0.0	0	1	0.0	0
BZ984-334		57.7	52.1	93	0	1.57	12.8	73	2	63.8	0.41	12.0	5	2	58.6	3

TABLE 27 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=MONTANA STATION=BOZEMAN NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES														
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		60.3	4.00	7	8.5	8.0	178	2	2.0				MJ			MJ		MI	MJ					
CHRIS		61.5	4.00	4	8.5	8.0	163	1	1.0	MJ	MJ		MI	MJ		MI			MI		MJ			
ERA	S	57.1	5.50	4	8.0	7.5	147	1	1.0	MJ	MI		MJ	MI		MJ		MI	MJ		MJ		MI	
STOA	S	61.4	4.00	7	8.0	8.0	182	3	2.3				MJ			MJ		MI	MI					
BUTTE86	S	63.4	3.00	4	8.0	8.0	166	2	2.0				MJ			MJ					MJ			
SD8072		60.2	4.50	7	7.0	7.5	167	2	1.7	MJ			MJ			MJ			MJ			MI	MI	
SD8073		62.6	4.50	7	7.5	8.0	167	4	2.7				MJ			MJ						MI		
SD8070		60.2	3.50	5	8.0	8.0	177	2	2.0				MJ			MJ		MI	MJ		MI			
SD0005		61.0	6.00	4	8.0	8.0	157	1	1.7	MI			MJ			MJ			MI	MI	MJ			
SD0010		61.0	3.50	4	8.0	7.5	179	1	1.7				MJ			MJ			MI		MJ		MI	
MN89103		59.9	4.00	4	7.0	8.0	159	1	1.0	MJ			MJ	MI		MJ		MI	MJ		MJ	MI		
MN90071		61.9	5.00	4	8.0	8.0	169	1	1.7				MJ			MJ			MI		MJ			
MN90114		59.9	4.00	4	8.0	7.5	161	1	1.0	MJ			MJ	MJ		MJ		MI	MJ		MJ		MI	
MN90253		60.2	5.00	4	8.0	8.0	167	1	1.7				MJ			MJ			MJ		MJ			
SBE0437		65.5	4.50	4	8.0	7.5	182	2	2.0	MI			MJ			MJ					MJ		MI	
SBE0444		63.2	4.50	5	8.0	7.5	167	4	2.7	MI			MJ			MJ					MI		MI	
ND671		65.5	3.50	9	8.0	7.5	194	4	3.7				MI										MI	
ND673		63.2	4.50	7	8.0	8.0	193	4	2.7				MJ			MJ								
ND674		63.6	6.00	4	8.0	7.5	171	1	1.7				MI	MI		MJ				MI	MJ		MI	
ND677		62.8	4.00	9	7.5	7.5	195	4	2.0	MJ	MJ		MJ	MI		MJ		MI				MI	MI	
ND678		61.9	4.50	7	8.0	8.0	185	3	2.3				MJ			MJ			MI					
XW398A4		62.7	5.00	7	8.0	8.0	182	4	2.7				MJ			MJ								
N86-0348		63.1	5.00	4	8.0	8.0	170	2	1.7	MI			MJ	MI		MJ					MJ			
N90-0666		63.6	5.00	5	7.5	8.0	172	4	2.7				MJ			MJ					MI	MI		
N90-0671		59.1	6.00	4	7.5	7.5	145	1	1.7	MI			MJ			MJ			MJ	MI	MJ	MI	MI	
N90-0700		64.1	4.75	7	8.0	7.5	179	4	3.0				MI			MJ							MI	
N88-3140		65.1	3.00	7	8.5	7.5	178	3	3.0				MI			MI		MJ					MI	
MT8849		62.2	6.50	4	7.5	7.5	161	1	1.0	MJ			MJ	MJ		MJ				MI	MJ	MI	MI	
BW152		60.3	2.50	5	8.0	7.0	162	1	1.7				MJ			MJ		MJ	MJ	MI	MI		MI	
8601AE3C		61.5	6.50	4	8.0	8.0	169	1	1.0	MJ	MI		MJ	MJ		MJ			MI	MI	MJ			
BZ988-351		0.0	0.00	0	0.0	0.0	0	1	1.0	MJ	MJ		MJ	MJ		MJ	MJ		MJ		MJ	MJ	MJ	MJ
BZ984-334		62.7	6.00	7	8.5	8.0	187	3	2.3	MI			MJ			MJ				MI				

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	31.7	8	13.9	62.0	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	144
MAJOR FAULTING VALUES	56.9	28.7	18	12.9	60.0	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	134

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 28 STATE=IDAHO STATION=ABERDEEN NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		62.5	39.7	83	1	1.60	13.5	72	3	67.8	0.33	13.1	5	3	58.2	2
CHRIS		62.0	34.1	61	1	1.58	14.2	68	4	68.0	0.32	14.0	5	3	58.2	2
ERA	S	61.8	31.7	53	2	1.59	11.3	78	1	70.8	0.34	9.7	5	2	52.6	1
STOA	S	62.1	38.5	70	0	1.55	13.0	76	3	70.5	0.32	12.3	5	2	57.9	2
BUTTE86	S	62.0	42.7	84	0	1.55	13.1	76	3	69.8	0.32	12.0	5	2	57.9	1
SD8072		63.4	42.9	89	0	1.54	12.6	92	2	69.3	0.35	11.8	5	2	56.5	1
SD8073		62.7	41.8	86	0	1.58	12.8	80	2	67.5	0.36	11.8	5	1	58.2	2
SD8070		63.0	41.8	81	1	1.54	12.1	85	2	67.0	0.35	10.8	5	1	55.3	1
SD0005		62.2	40.0	88	1	1.54	10.8	78	2	68.6	0.32	9.1	5	2	54.3	1
SD0010		61.2	37.0	67	1	1.56	12.3	80	2	68.8	0.32	10.8	5	2	56.2	2
MN89103		61.2	36.5	50	2	1.51	12.6	80	2	68.1	0.32	11.6	5	1	57.3	2
MN90071		62.2	43.7	84	0	1.46	12.2	89	2	70.0	0.33	11.1	5	2	57.9	2
MN90114		63.5	45.7	89	1	1.54	11.5	95	2	63.6	0.40	9.3	5	1	53.8	1
MN90253		62.2	46.5	86	0	1.53	12.2	71	2	64.8	0.35	11.4	5	1	56.5	2
SBE0437		62.6	42.6	85	1	1.57	12.0	78	2	68.4	0.34	10.2	5	2	55.3	1
SBE0444		61.6	42.2	81	1	1.49	11.3	77	2	69.6	0.33	10.3	5	2	56.2	1
ND671		63.4	40.7	80	1	1.63	13.4	74	3	69.3	0.33	12.4	5	2	59.6	2
ND673		63.6	46.3	86	0	1.54	13.9	80	3	70.3	0.34	13.0	5	4	60.0	2
ND674		63.6	39.4	79	1	1.62	13.4	84	3	66.8	0.36	12.3	5	1	58.6	3
ND677		63.1	40.8	81	0	1.60	13.8	72	3	66.9	0.35	13.3	5	3	57.9	2
ND678		63.1	39.7	71	1	1.53	14.0	85	4	66.0	0.32	12.9	5	1	58.6	2
XW398A4		62.8	42.2	83	0	1.63	12.1	76	2	69.3	0.39	11.4	5	2	55.8	1
N86-0348		62.5	38.9	76	1	1.58	11.3	74	2	68.4	0.37	10.0	5	2	54.3	1
N90-0666		61.6	39.5	80	0	1.64	12.2	82	2	69.5	0.36	11.1	5	2	57.6	2
N90-0671		62.3	41.0	86	1	1.55	11.6	84	2	68.1	0.34	9.9	5	1	54.6	2
N90-0700		61.0	36.1	63	1	1.50	12.9	83	2	63.1	0.36	11.8	5	1	57.6	3
N88-3140		60.6	40.5	81	0	1.64	14.0	66	4	63.6	0.36	13.4	5	2	56.5	1
MT8849		62.8	41.5	77	1	1.64	12.6	87	2	66.0	0.36	11.3	5	1	56.2	2
BW152		62.1	39.4	77	0	1.57	13.9	86	3	70.6	0.34	13.4	5	4	56.9	1
8601AE3C		63.9	41.8	79	1	1.56	14.3	87	4	70.7	0.35	13.5	5	4	59.3	1
BZ988-351		60.8	33.9	56	3	1.58	12.4	65	2	66.7	0.32	11.7	5	1	54.6	1
BZ984-334		60.8	44.2	82	2	1.65	12.2	67	2	67.8	0.38	11.4	5	1	55.3	1
SERRA		59.3	25.7	51	4	1.66	11.9	39	1	67.5	0.38	11.3	5	1	53.5	2
VANDAL		59.4	33.3	50	2	1.61	14.3	75	4	68.3	0.36	13.4	5	4	57.9	2
AMIDON		62.0	38.8	76	1	1.49	14.0	100	4	71.4	0.32	12.8	5	3	58.2	3

TABLE 28 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=IDAHO STATION=ABERDEEN NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		58.2	3.50	7	8.0	8.0	172	2	2.7				MI	MI				MI	MJ					
CHRIS		58.2	3.00	7	8.5	8.0	177	2	3.0	MI				MI				MI	MJ					
ERA	S	52.6	4.50	5	8.0	7.5	162	1	1.3	MJ			MJ			MJ		MJ	MJ		MI		MI	
STOA	S	57.9	3.50	7	8.0	8.0	186	2	2.3				MI			MJ		MI	MJ					
BUTTE86	S	57.9	2.75	4	8.0	8.0	167	1	2.0				MI			MJ		MJ	MJ	MI	MJ			
SD8072		56.5	3.00	5	8.0	8.0	166	1	1.7				MJ			MJ		MJ	MJ		MI			
SD8073		58.2	3.50	5	7.5	7.5	160	2	1.7				MJ	MI		MJ		MI	MJ		MI	MI	MI	
SD8070		55.3	3.25	5	8.0	7.5	168	1	1.3				MJ	MI		MJ		MJ	MJ		MI		MI	
SD0005		54.3	4.00	7	8.0	7.5	173	1	1.7				MJ			MJ		MJ	MJ				MI	
SD0010		56.2	4.50	7	7.5	7.5	177	2	2.0				MJ			MJ		MI	MJ			MI	MI	
MN89103		57.3	3.00	7	7.0	8.0	178	2	1.7				MJ	MI		MJ		MI	MJ			MI		
MN90071		57.9	3.75	4	8.0	7.5	170	1	1.7				MJ			MJ		MI	MJ		MJ		MI	
MN90114		53.8	4.50	4	8.0	7.5	129	1	1.3				MJ	MJ		MJ		MJ	MJ		MJ		MI	MJ
MN90253		56.5	5.00	7	8.0	7.0	171	2	1.7				MJ	MJ		MJ		MI	MJ				MI	
SBE0437		55.3	3.50	5	7.5	7.5	161	1	1.7				MJ			MJ		MJ	MJ		MI	MI	MI	
SBE0444		56.2	3.50	9	8.0	7.5	191	1	1.7				MJ			MJ		MJ	MJ				MI	
ND671		59.6	3.00	9	8.0	7.5	192	2	2.3				MI			MJ		MI	MJ				MI	
ND673		60.0	3.50	9	8.0	7.5	203	2	3.0				MI					MI	MJ				MI	
ND674		58.6	4.50	9	8.0	7.5	183	2	2.0				MI	MI		MJ			MJ				MI	
ND677		57.9	3.50	9	8.5	7.5	184	2	2.7				MI	MI				MI	MJ				MI	
ND678		58.6	3.50	9	8.0	7.5	178	2	2.3					MJ		MI		MI	MJ				MI	
XW398A4		55.8	4.00	7	9.0	7.5	181	1	1.7				MJ			MJ		MJ	MJ				MI	
N86-0348		54.3	4.00	5	8.0	7.5	166	1	1.7				MJ			MJ		MJ	MJ		MI		MI	
N90-0666		57.6	3.50	7	8.0	7.5	186	2	2.0				MJ			MJ		MI	MJ				MI	
N90-0671		54.6	5.00	4	7.5	8.0	158	1	1.3				MJ	MI		MJ		MI	MJ		MJ	MI		
N90-0700		57.6	5.00	7	7.5	7.5	167	2	1.7				MJ	MJ		MJ			MJ			MI	MI	
N88-3140		56.5	2.50	4	8.5	8.0	183	1	2.3					MJ				MJ	MJ	MI	MJ			
MT8849		56.2	5.50	4	8.0	7.5	172	1	1.3				MJ	MJ		MJ		MI	MJ		MJ		MI	
BW152		56.9	2.50	7	8.0	8.0	187	1	2.7				MI					MJ	MJ	MI				
8601AE3C		59.3	3.00	9	8.0	8.0	203	1	3.0									MJ	MJ					
BZ988-351		54.6	5.00	4	7.5	7.5	167	1	1.3	MI			MJ	MI		MJ		MJ	MJ		MJ	MI	MI	
BZ984-334		55.3	4.25	2	8.0	8.0	168	1	1.3				MJ	MI		MJ		MJ	MJ		MJ			
SERRA		53.5	5.50	4	8.0	7.5	173	1	1.0	MJ			MJ	MI		MJ		MI	MJ		MJ		MI	
VANDAL		57.9	4.50	9	8.5	7.5	193	2	3.3	MI								MI	MJ				MI	
AMIDON		62.2	3.25	7	8.0	8.0	182	4	3.7							MI								

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	35.5	8	13.9	68.3	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	151
MAJOR FAULTING VALUES	56.9	32.5	18	12.9	66.3	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	141

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP

TABLE 29 STATE=WASHINGTON STATION=PULLMAN NURSERY=UNIFORM

VARIETY	STD	TEST WT #/BU	1000 K.WT G.	SIZING LG %	SIZING SM %	WHT ASH %	WHT PRO %	HARD-NESS	WHEAT SCORE ***	FLR EXT %	ASH @ 65%EX %	FLR PRO %	MILL CHAR	MILL SCORE ***	MIX ABS %	MIX PAT
MARQUIS		60.9	30.7	25	1	1.32	14.5	69	4	68.5	0.26	14.3	5	4	57.9	2
CHRIS		61.1	26.1	11	2	1.27	14.6	77	4	67.9	0.26	14.1	5	4	57.3	1
ERA	S	61.6	28.9	21	3	1.30	12.6	64	2	71.2	0.28	11.3	5	2	53.2	1
STOA	S	61.0	29.7	11	2	1.24	12.4	78	2	68.9	0.27	11.8	5	2	54.6	2
BUTTE86	S	62.0	32.6	26	1	1.19	12.9	67	2	67.7	0.23	11.7	5	2	55.8	2
SD8072		61.5	31.3	33	2	1.19	11.8	86	2	69.8	0.27	10.6	5	2	54.3	2
SD8073		62.3	32.3	32	2	1.21	12.8	73	2	69.2	0.29	11.8	5	2	58.2	3
SD8070		61.8	29.8	14	3	1.14	11.6	84	2	68.0	0.25	10.4	5	2	54.3	2
SD0005		60.6	31.8	37	1	1.29	13.6	73	3	69.2	0.27	12.7	5	3	58.6	2
SD0010		61.5	32.8	29	1	1.24	13.7	92	3	67.5	0.25	12.5	5	3	58.6	3
MN89103		60.8	29.8	11	4	1.25	13.2	78	3	67.6	0.28	11.6	5	2	55.0	1
MN90071		61.8	35.0	45	1	1.22	13.1	83	3	68.2	0.26	11.9	5	2	57.9	2
MN90114		61.5	35.0	44	1	1.27	13.3	92	3	67.9	0.29	11.4	5	2	57.3	2
MN90253		62.0	32.9	37	1	1.22	13.9	76	3	68.3	0.28	12.3	5	2	55.0	2
SBE0437		60.9	33.0	37	1	1.25	13.8	72	3	67.9	0.28	12.9	5	3	57.3	2
SBE0444		60.8	34.5	47	1	1.20	12.2	71	2	68.7	0.28	11.4	5	2	53.5	1
ND671		62.8	31.1	22	1	1.24	13.4	49	3	68.5	0.25	12.9	5	3	57.3	3
ND673		61.3	31.7	27	2	1.23	12.6	62	2	69.8	0.26	11.7	5	2	55.0	2
ND674		62.4	29.9	37	1	1.20	14.2	69	4	67.3	0.29	13.4	5	4	57.6	3
ND677		61.8	30.7	25	2	1.26	12.4	70	2	67.4	0.32	11.7	5	2	53.2	2
ND678		62.2	28.9	10	2	1.18	13.7	75	3	66.7	0.27	12.7	5	2	58.2	2
XW398A4		62.5	35.7	38	1	1.25	12.4	79	2	69.9	0.26	11.9	5	2	57.6	3
N86-0348		60.9	31.7	36	2	1.30	13.7	60	3	67.6	0.30	13.2	5	4	57.6	2
N90-0666		61.0	33.6	51	1	1.31	13.5	75	3	69.7	0.31	12.7	5	3	57.3	2
N90-0671		59.7	30.5	35	2	1.31	12.6	70	2	68.1	0.31	11.6	5	2	52.9	2
N90-0700		60.2	27.9	10	3	1.18	13.8	98	3	63.6	0.32	12.4	5	1	58.2	3
N88-3140		61.4	35.7	58	0	1.24	14.5	65	4	66.4	0.29	13.6	5	3	58.6	2
MT8849		58.5	28.7	20	5	1.37	12.6	74	2	66.8	0.37	11.5	5	1	56.2	2
BW152		61.9	30.4	16	2	1.24	13.7	81	3	69.6	0.32	13.1	5	4	56.2	2
8601AE3C		61.4	35.5	46	2	1.31	14.0	70	4	68.3	0.35	13.2	5	4	57.3	2
BZ988-351		57.8	29.3	16	2	1.36	14.1	67	4	66.1	0.33	13.6	5	3	57.6	2
BZ984-334		61.1	42.0	72	1	1.24	13.3	56	3	67.8	0.32	12.4	5	2	55.3	2

TABLE 29 CONTD

QUALITY DATA OF SPRING WHEAT SAMPLES 1993 CROP
STATE=WASHINGTON STATION=PULLMAN NURSERY=UNIFORM

VARIETY	STD	BAKE ABS %	MIX TIME MIN	DOUGH CHAR	CRUMB COLOR	CRUMB GRAIN	LOAF VOL CC	BAKE SCORE ***	GENERAL SCORE ***	DEFICIENCIES															
										TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MT	DC	CC	CG	LV
MARQUIS		57.9	4.00	7	8.0	8.0	178	2	3.3									MI	MJ					
CHRIS		57.3	3.50	7	8.0	8.0	177	1	3.0		MI							MJ	MJ					
ERA	S	53.2	5.00	4	8.0	8.0	170	1	1.7				MJ			MJ		MJ	MJ		MJ			
STOA	S	54.6	6.00	7	8.0	8.0	178	1	1.7				MJ			MJ		MI	MJ	MI				
BUTTE86	S	55.8	4.00	7	7.5	8.0	173	2	2.0				MJ			MJ		MI	MJ			MI		
SD8072		54.3	4.00	7	7.5	8.0	170	2	2.0				MJ			MJ		MI	MJ			MI		
SD8073		58.2	5.00	9	7.0	8.0	175	2	2.0				MJ			MJ			MJ			MI		
SD8070		54.3	5.50	7	7.5	8.0	180	2	2.0				MJ			MJ		MI	MJ			MI		
SD0005		58.6	4.25	9	8.0	8.5	190	2	2.7				MI			MI		MI	MJ					
SD0010		58.6	5.50	9	8.0	8.0	187	2	2.7				MI			MI			MJ					
MN89103		55.0	4.50	9	8.0	8.0	178	1	2.0				MI			MJ		MJ	MJ					
MN90071		57.9	3.75	7	8.5	8.0	187	2	2.3				MI			MJ		MI	MJ					
MN90114		57.3	4.00	5	8.0	8.5	182	2	2.3				MI			MJ		MI	MJ		MI			
MN90253		55.0	3.00	7	8.5	8.0	192	2	2.3				MI			MJ		MI	MJ					
SBE0437		57.3	5.00	9	8.0	8.0	187	2	2.7				MI			MI		MI	MJ					
SBE0444		53.5	5.00	4	8.0	7.5	160	1	1.7				MJ			MJ		MJ	MJ		MJ			MI
ND671		57.3	5.50	9	8.0	8.0	191	2	2.7				MI			MI			MJ					
ND673		55.0	6.50	9	8.0	8.0	180	1	1.7				MJ			MJ		MI	MJ	MI				
ND674		57.6	6.50	4	8.0	8.0	184	1	3.0										MJ	MI	MJ			
ND677		53.2	7.00	5	8.5	7.5	172	1	1.7				MJ			MJ		MI	MJ	MI	MI			MI
ND678		58.2	4.50	9	8.5	8.0	184	2	2.3				MI	MI		MI		MI	MJ					
XW398A4		57.6	5.25	9	8.0	7.5	177	2	2.0				MJ			MJ			MJ					MI
N86-0348		57.6	4.00	9	8.0	8.5	185	2	3.0				MI					MI	MJ					
N90-0666		57.3	5.25	7	7.5	7.0	183	2	2.7				MI			MI		MI	MJ			MI	MI	
N90-0671		52.9	7.50	4	7.0	6.5	156	1	1.7				MJ			MJ		MI	MJ	MI	MJ	MI	MI	
N90-0700		58.2	4.50	9	8.0	7.5	192	2	2.0		MI		MI	MJ		MJ			MJ					MI
N88-3140		58.6	3.00	9	8.0	8.0	193	2	3.0					MI				MI	MJ					
MT8849		56.2	7.50	4	8.0	7.0	172	1	1.3				MJ	MI		MJ		MI	MJ	MI	MJ			MI
BW152		56.2	3.50	7	8.0	8.5	175	2	3.0				MI					MI	MJ					
8601AE3C		57.3	4.00	9	8.0	8.0	191	2	3.3									MI	MJ					
BZ988-351		57.6	5.25	9	8.0	8.0	179	2	3.0		MI			MI				MI	MJ					
BZ984-334		55.3	5.00	7	8.5	8.0	181	2	2.3				MI			MJ		MI	MJ					

DEFICIENCIES	TW	KW	SM	WP	EX	A65	FP	MC	MX	BA	MIX TIME (MT)		DC	CC	CG	LV
MINOR FAULTING VALUES	57.9	28.3	8	13.9	67.2	.57	12.9	3	2,7,8	61.9	5.75-8.00	2.00-2.75	6	7.5	7.5	153
MAJOR FAULTING VALUES	56.9	25.3	18	12.9	65.2	.61	12.4	2	1,9-11	60.4	UNDER 1.75	OVER 8.00	4	5.0	5.0	143

*** 1=NO PROMISE 2=LITTLE PROMISE 3=SOME PROMISE 4=GOOD PROMISE.

Table 30

BUTTE86 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.23	1.33	59.70	62.00	2.30
1000 Ker. Wt.	38.07	5.10	32.60	42.70	10.10
Wht.Protein 14%	12.97	0.12	12.90	13.10	0.20
Wht. Ash 14%	1.42	0.20	1.19	1.55	0.36
Hardness	76.67	10.02	67.00	87.00	20.00
Extraction	67.87	1.86	66.10	69.80	3.70
Fl. Ash @ 65%	0.29	0.06	0.23	0.33	0.10
Fl. Protein 14%	11.87	0.15	11.70	12.00	0.30
Mix Pattern	2.00	1.00	1.00	3.00	2.00
Bake Abs.	59.03	3.92	55.80	63.40	7.60
Loaf Vol.	168.67	3.79	166.00	173.00	7.00

BW152 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.00	1.73	59.00	62.10	3.10
1000 Ker. Wt.	35.27	4.54	30.40	39.40	9.00
Wht.Protein 14%	13.50	0.53	12.90	13.90	1.00
Wht. Ash 14%	1.44	0.17	1.24	1.57	0.33
Hardness	84.67	3.21	81.00	87.00	6.00
Extraction	68.37	3.04	64.90	70.60	5.70
Fl. Ash @ 65%	0.36	0.06	0.32	0.43	0.11
Fl. Protein 14%	12.53	1.25	11.10	13.40	2.30
Mix Pattern	1.33	0.58	1.00	2.00	1.00
Bake Abs.	57.80	2.19	56.20	60.30	4.10
Loaf Vol.	174.67	12.50	162.00	187.00	25.00

BZ984-334 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.87	1.88	57.70	61.10	3.40
1000 Ker. Wt.	46.10	5.31	42.00	52.10	10.10
Wht.Protein 14%	12.77	0.55	12.20	13.30	1.10
Wht. Ash 14%	1.49	0.22	1.24	1.65	0.41
Hardness	65.33	8.62	56.00	73.00	17.00
Extraction	66.47	2.31	63.80	67.80	4.00
Fl. Ash @ 65%	0.37	0.05	0.32	0.41	0.09
Fl. Protein 14%	11.93	0.50	11.40	12.40	1.00
Mix Pattern	2.00	1.00	1.00	3.00	2.00
Bake Abs.	57.77	4.27	55.30	62.70	7.40
Loaf Vol.	178.67	9.71	168.00	187.00	19.00

BZ988-351 n=2

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.30	2.12	57.80	60.80	3.00
1000 Ker. Wt.	31.60	3.25	29.30	33.90	4.60
Wht.Protein 14%	13.25	1.20	12.40	14.10	1.70
Wht. Ash 14%	1.47	0.16	1.36	1.58	0.22
Hardness	66.00	1.41	65.00	67.00	2.00
Extraction	66.40	0.42	66.10	66.70	0.60
Fl. Ash @ 65%	0.33	0.01	0.32	0.33	0.01
Fl. Protein 14%	12.65	1.34	11.70	13.60	1.90
Mix Pattern	1.50	0.71	1.00	2.00	1.00
Bake Abs.	56.10	2.12	54.60	57.60	3.00
Loaf Vol.	173.00	8.49	167.00	179.00	12.00

Statistical Evaluation of Uniform Samples from West Region

Table 31

CHRIS n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.33	3.87	54.90	62.00	7.10
1000 Ker. Wt.	29.13	4.34	26.10	34.10	8.00
Wht.Protein 14%	14.23	0.35	13.90	14.60	0.70
Wht. Ash 14%	1.48	0.19	1.27	1.60	0.33
Hardness	70.33	5.86	66.00	77.00	11.00
Extraction	65.17	4.82	59.60	68.00	8.40
Fl. Ash @ 65%	0.33	0.08	0.26	0.41	0.15
Fl. Protein 14%	13.67	0.67	12.90	14.10	1.20
Mix Pattern	2.00	1.00	1.00	3.00	2.00
Bake Abs.	59.00	2.21	57.30	61.50	4.20
Loaf Vol.	172.33	8.08	163.00	177.00	14.00

ERA n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.63	3.58	55.50	61.80	6.30
1000 Ker. Wt.	29.93	1.54	28.90	31.70	2.80
Wht.Protein 14%	11.70	0.78	11.20	12.60	1.40
Wht. Ash 14%	1.46	0.15	1.30	1.59	0.29
Hardness	73.00	7.81	64.00	78.00	14.00
Extraction	67.73	5.66	61.20	71.20	10.00
Fl. Ash @ 65%	0.36	0.10	0.28	0.47	0.19
Fl. Protein 14%	10.23	0.92	9.70	11.30	1.60
Mix Pattern	1.33	0.58	1.00	2.00	1.00
Bake Abs.	54.30	2.44	52.60	57.10	4.50
Loaf Vol.	159.67	11.68	147.00	170.00	23.00

MARQUIS n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.90	1.60	59.30	62.50	3.20
1000 Ker. Wt.	35.03	4.51	30.70	39.70	9.00
Wht.Protein 14%	13.63	0.81	12.90	14.50	1.60
Wht. Ash 14%	1.47	0.14	1.32	1.60	0.28
Hardness	74.33	6.81	69.00	82.00	13.00
Extraction	66.17	3.45	62.20	68.50	6.30
Fl. Ash @ 65%	0.35	0.10	0.26	0.46	0.20
Fl. Protein 14%	12.97	1.40	11.50	14.30	2.80
Mix Pattern	2.00	0.00	2.00	2.00	0.00
Bake Abs.	58.80	1.31	57.90	60.30	2.40
Loaf Vol.	176.00	3.46	172.00	178.00	6.00

MN89103 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.80	3.82	54.40	61.20	6.80
1000 Ker. Wt.	32.73	3.43	29.80	36.50	6.70
Wht.Protein 14%	12.60	0.60	12.00	13.20	1.20
Wht. Ash 14%	1.42	0.14	1.25	1.51	0.26
Hardness	78.00	2.00	76.00	80.00	4.00
Extraction	65.57	3.96	61.00	68.10	7.10
Fl. Ash @ 65%	0.34	0.07	0.28	0.41	0.13
Fl. Protein 14%	11.27	0.58	10.60	11.60	1.00
Mix Pattern	1.67	0.58	1.00	2.00	1.00
Bake Abs.	57.40	2.45	55.00	59.90	4.90
Loaf Vol.	171.67	10.97	159.00	178.00	19.00

Table 32

MN90071 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.03	1.69	59.10	62.20	3.10
1000 Ker. Wt.	40.17	4.57	35.00	43.70	8.70
Wht.Protein 14%	12.73	0.47	12.20	13.10	0.90
Wht. Ash 14%	1.39	0.14	1.22	1.48	0.26
Hardness	87.00	3.46	83.00	89.00	6.00
Extraction	68.03	2.06	65.90	70.00	4.10
Fl. Ash @ 65%	0.32	0.06	0.26	0.37	0.11
Fl. Protein 14%	11.67	0.49	11.10	12.00	0.90
Mix Pattern	2.33	0.58	2.00	3.00	1.00
Bake Abs.	59.23	2.31	57.90	61.90	4.00
Loaf Vol.	175.33	10.12	169.00	187.00	18.00

MN90114 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.37	3.83	56.10	63.50	7.40
1000 Ker. Wt.	40.67	5.38	35.00	45.70	10.70
Wht.Protein 14%	12.47	0.91	11.50	13.30	1.80
Wht. Ash 14%	1.46	0.17	1.27	1.57	0.30
Hardness	91.33	4.04	87.00	95.00	8.00
Extraction	63.67	4.20	59.50	67.90	8.40
Fl. Ash @ 65%	0.38	0.09	0.29	0.46	0.17
Fl. Protein 14%	10.53	1.10	9.30	11.40	2.10
Mix Pattern	1.67	0.58	1.00	2.00	1.00
Bake Abs.	57.00	3.06	53.80	59.90	6.10
Loaf Vol.	157.33	26.69	129.00	182.00	53.00

MN90253 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.40	1.22	60.00	62.20	2.20
1000 Ker. Wt.	40.83	7.08	32.90	46.50	13.60
Wht.Protein 14%	12.67	1.08	11.90	13.90	2.00
Wht. Ash 14%	1.44	0.20	1.22	1.58	0.36
Hardness	71.33	4.51	67.00	76.00	9.00
Extraction	65.83	2.15	64.40	68.30	3.90
Fl. Ash @ 65%	0.32	0.04	0.28	0.35	0.07
Fl. Protein 14%	11.60	0.62	11.10	12.30	1.20
Mix Pattern	2.33	0.58	2.00	3.00	1.00
Bake Abs.	57.23	2.68	55.00	60.20	5.20
Loaf Vol.	176.67	13.43	167.00	192.00	25.00

MT8849 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	58.10	4.91	53.00	62.80	9.80
1000 Ker. Wt.	34.80	6.42	28.70	41.50	12.80
Wht.Protein 14%	12.50	0.17	12.30	12.60	0.30
Wht. Ash 14%	1.57	0.17	1.37	1.69	0.32
Hardness	80.67	6.51	74.00	87.00	13.00
Extraction	63.83	4.46	58.70	66.80	8.10
Fl. Ash @ 65%	0.40	0.07	0.36	0.48	0.12
Fl. Protein 14%	11.20	0.36	10.80	11.50	0.70
Mix Pattern	2.67	1.15	2.00	4.00	2.00
Bake Abs.	58.20	3.46	56.20	62.20	6.00
Loaf Vol.	168.33	6.35	161.00	172.00	11.00

Statistical Evaluation of Uniform Samples from West Region

Table 33

	ND671 n=3					ND673 n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	62.17	1.64	60.30	63.40	3.10	61.03	2.71	58.20	63.60	5.40
1000 Ker. Wt.	35.83	4.80	31.10	40.70	9.60	38.03	7.49	31.70	46.30	14.60
Wht.Protein 14%	13.47	0.12	13.40	13.60	0.20	13.00	0.78	12.50	13.90	1.40
Wht. Ash 14%	1.49	0.22	1.24	1.63	0.39	1.43	0.17	1.23	1.54	0.31
Hardness	66.00	14.73	49.00	75.00	26.00	73.67	10.12	62.00	80.00	18.00
Extraction	67.97	1.67	66.10	69.30	3.20	68.23	3.16	64.60	70.30	5.70
Fl. Ash @ 65%	0.32	0.07	0.25	0.38	0.13	0.34	0.08	0.26	0.41	0.15
Fl. Protein 14%	12.87	0.45	12.40	13.30	0.90	11.93	0.97	11.10	13.00	1.90
Mix Pattern	2.67	0.58	2.00	3.00	1.00	2.33	0.58	2.00	3.00	1.00
Bake Abs.	60.80	4.23	57.30	65.50	8.20	59.40	4.13	55.00	63.20	8.20
Loaf Vol.	192.33	1.53	191.00	194.00	3.00	192.00	11.53	180.00	203.00	23.00

	ND674 n=3					ND677 n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.67	2.39	59.00	63.60	4.60	60.03	4.24	55.20	63.10	7.90
1000 Ker. Wt.	34.70	4.75	29.90	39.40	9.50	33.23	6.67	28.20	40.80	12.60
Wht.Protein 14%	13.57	0.57	13.10	14.20	1.10	13.00	0.72	12.40	13.80	1.40
Wht. Ash 14%	1.45	0.22	1.20	1.62	0.42	1.51	0.22	1.26	1.67	0.41
Hardness	77.33	7.64	69.00	84.00	15.00	67.67	5.86	61.00	72.00	11.00
Extraction	65.33	2.98	61.90	67.30	5.40	64.97	3.79	60.60	67.40	6.80
Fl. Ash @ 65%	0.35	0.06	0.29	0.41	0.12	0.38	0.09	0.32	0.48	0.16
Fl. Protein 14%	12.70	0.61	12.30	13.40	1.10	12.30	0.87	11.70	13.30	1.60
Mix Pattern	3.33	0.58	3.00	4.00	1.00	2.00	0.00	2.00	2.00	0.00
Bake Abs.	59.93	3.21	57.60	63.60	6.00	57.97	4.80	53.20	62.80	9.60
Loaf Vol.	179.33	7.23	171.00	184.00	13.00	183.67	11.50	172.00	195.00	23.00

Table 34

ND678 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.87	1.43	60.30	63.10	2.80
1000 Ker. Wt.	33.93	5.44	28.90	39.70	10.80
Wht.Protein 14%	13.50	0.62	12.80	14.00	1.20
Wht. Ash 14%	1.37	0.18	1.18	1.53	0.35
Hardness	79.00	5.29	75.00	85.00	10.00
Extraction	66.03	0.65	65.40	66.70	1.30
Fl. Ash @ 65%	0.30	0.03	0.27	0.32	0.05
Fl. Protein 14%	12.33	0.81	11.40	12.90	1.50
Mix Pattern	2.33	0.58	2.00	3.00	1.00
Bake Abs.	59.57	2.03	58.20	61.90	3.70
Loaf Vol.	182.33	3.79	178.00	185.00	7.00

N86-0348 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.27	2.61	57.40	62.50	5.10
1000 Ker. Wt.	36.07	3.84	31.70	38.90	7.20
Wht.Protein 14%	12.47	1.20	11.30	13.70	2.40
Wht. Ash 14%	1.49	0.16	1.30	1.58	0.28
Hardness	70.67	9.45	60.00	78.00	18.00
Extraction	65.63	4.12	60.90	68.40	7.50
Fl. Ash @ 65%	0.37	0.08	0.30	0.45	0.15
Fl. Protein 14%	11.33	1.67	10.00	13.20	3.20
Mix Pattern	2.33	1.53	1.00	4.00	3.00
Bake Abs.	58.33	4.45	54.30	63.10	8.80
Loaf Vol.	173.67	10.02	166.00	185.00	19.00

N88-3140 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.20	1.44	58.60	61.40	2.80
1000 Ker. Wt.	39.30	3.17	35.70	41.70	6.00
Wht.Protein 14%	14.07	0.40	13.70	14.50	0.80
Wht. Ash 14%	1.46	0.20	1.24	1.64	0.40
Hardness	69.67	7.23	65.00	78.00	13.00
Extraction	64.90	1.41	63.60	66.40	2.80
Fl. Ash @ 65%	0.34	0.05	0.29	0.38	0.09
Fl. Protein 14%	13.17	0.59	12.50	13.60	1.10
Mix Pattern	1.33	0.58	1.00	2.00	1.00
Bake Abs.	60.07	4.48	56.50	65.10	8.60
Loaf Vol.	184.67	7.64	178.00	193.00	15.00

N90-0666 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.20	1.93	58.00	61.60	3.60
1000 Ker. Wt.	37.53	3.41	33.60	39.50	5.90
Wht.Protein 14%	12.67	0.72	12.20	13.50	1.30
Wht. Ash 14%	1.50	0.17	1.31	1.64	0.33
Hardness	79.33	3.79	75.00	82.00	7.00
Extraction	68.07	2.66	65.00	69.70	4.70
Fl. Ash @ 65%	0.36	0.05	0.31	0.41	0.10
Fl. Protein 14%	11.43	1.14	10.50	12.70	2.20
Mix Pattern	2.67	1.15	2.00	4.00	2.00
Bake Abs.	59.50	3.55	57.30	63.60	6.30
Loaf Vol.	180.33	7.37	172.00	186.00	14.00

Statistical Evaluation of Uniform Samples from West Region

Table 35

	N90-0671 n=3					N90-0700 n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.83	2.40	57.50	62.30	4.80	59.93	1.22	58.60	61.00	2.40
1000 Ker. Wt.	36.40	5.37	30.50	41.00	10.50	32.47	4.18	27.90	36.10	8.20
Wht.Protein 14%	11.70	0.85	10.90	12.60	1.70	13.27	0.47	12.90	13.80	0.90
Wht. Ash 14%	1.47	0.14	1.31	1.55	0.24	1.36	0.17	1.18	1.50	0.32
Hardness	84.33	14.50	70.00	99.00	29.00	88.67	8.14	83.00	98.00	15.00
Extraction	66.20	3.29	62.40	68.10	5.70	63.53	0.40	63.10	63.90	0.80
Fl. Ash @ 65%	0.36	0.06	0.31	0.42	0.11	0.35	0.03	0.32	0.38	0.06
Fl. Protein 14%	10.47	0.98	9.90	11.60	1.70	12.13	0.31	11.80	12.40	0.60
Mix Pattern	2.33	0.58	2.00	3.00	1.00	3.00	0.00	3.00	3.00	0.00
Bake Abs.	55.53	3.20	52.90	59.10	6.20	59.97	3.59	57.60	64.10	6.50
Loaf Vol.	153.00	7.00	145.00	158.00	13.00	179.33	12.50	167.00	192.00	25.00

	SBE0437 n=3					SBE0444 n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.40	2.49	57.70	62.60	4.90	59.97	2.17	57.50	61.60	4.10
1000 Ker. Wt.	38.77	5.08	33.00	42.60	9.60	38.10	3.87	34.50	42.20	7.70
Wht.Protein 14%	12.87	0.90	12.00	13.80	1.80	11.83	0.47	11.30	12.20	0.90
Wht. Ash 14%	1.44	0.17	1.25	1.57	0.32	1.41	0.19	1.20	1.55	0.35
Hardness	78.67	7.02	72.00	86.00	14.00	71.33	5.51	66.00	77.00	11.00
Extraction	66.77	2.41	64.00	68.40	4.40	67.67	2.61	64.70	69.60	4.90
Fl. Ash @ 65%	0.34	0.07	0.28	0.41	0.13	0.33	0.05	0.28	0.37	0.09
Fl. Protein 14%	11.33	1.40	10.20	12.90	2.70	10.77	0.57	10.30	11.40	1.10
Mix Pattern	2.00	1.00	1.00	3.00	2.00	1.67	1.15	1.00	3.00	2.00
Bake Abs.	59.37	5.40	55.30	65.50	10.20	57.63	5.01	53.50	63.20	9.70
Loaf Vol.	176.67	13.80	161.00	187.00	26.00	172.67	16.26	160.00	191.00	31.00

Statistical Evaluation of Uniform Samples from West Region

Table 36

SD0005 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	59.93	2.66	57.00	62.20	5.20
1000 Ker. Wt.	36.10	4.11	31.80	40.00	8.20
Wht.Protein 14%	12.13	1.40	10.80	13.60	2.80
Wht. Ash 14%	1.44	0.13	1.29	1.54	0.25
Hardness	78.00	5.00	73.00	83.00	10.00
Extraction	67.17	3.02	63.70	69.20	5.50
Fl. Ash @ 65%	0.34	0.08	0.27	0.42	0.15
Fl. Protein 14%	10.70	1.83	9.10	12.70	3.60
Mix Pattern	2.00	1.00	1.00	3.00	2.00
Bake Abs.	57.97	3.39	54.30	61.00	6.70
Loaf Vol.	173.33	16.50	157.00	190.00	33.00

SD0010 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.30	1.82	58.20	61.50	3.30
1000 Ker. Wt.	35.70	2.52	32.80	37.30	4.50
Wht.Protein 14%	12.90	0.72	12.30	13.70	1.40
Wht. Ash 14%	1.47	0.20	1.24	1.60	0.36
Hardness	86.00	6.00	80.00	92.00	12.00
Extraction	68.23	0.67	67.50	68.80	1.30
Fl. Ash @ 65%	0.30	0.05	0.25	0.34	0.09
Fl. Protein 14%	11.57	0.86	10.80	12.50	1.70
Mix Pattern	2.67	0.58	2.00	3.00	1.00
Bake Abs.	58.60	2.40	56.20	61.00	4.80
Loaf Vol.	181.00	5.29	177.00	187.00	10.00

SD8070 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.43	1.78	59.50	63.00	3.50
1000 Ker. Wt.	35.70	6.00	29.80	41.80	12.00
Wht.Protein 14%	12.00	0.36	11.60	12.30	0.70
Wht. Ash 14%	1.41	0.23	1.14	1.54	0.40
Hardness	81.67	4.93	76.00	85.00	9.00
Extraction	66.83	1.26	65.50	68.00	2.50
Fl. Ash @ 65%	0.32	0.06	0.25	0.37	0.12
Fl. Protein 14%	10.70	0.26	10.40	10.90	0.50
Mix Pattern	1.67	0.58	1.00	2.00	1.00
Bake Abs.	56.60	3.16	54.30	60.20	5.90
Loaf Vol.	175.00	6.24	168.00	180.00	12.00

SD8072 n=3

	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	60.60	3.34	56.90	63.40	6.50
1000 Ker. Wt.	35.53	6.40	31.30	42.90	11.60
Wht.Protein 14%	12.37	0.49	11.80	12.70	0.90
Wht. Ash 14%	1.45	0.23	1.19	1.62	0.43
Hardness	83.67	9.71	73.00	92.00	19.00
Extraction	67.67	3.27	63.90	69.80	5.90
Fl. Ash @ 65%	0.35	0.08	0.27	0.43	0.16
Fl. Protein 14%	11.23	0.60	10.60	11.80	1.20
Mix Pattern	2.00	1.00	1.00	3.00	2.00
Bake Abs.	57.00	2.98	54.30	60.20	5.90
Loaf Vol.	167.67	2.08	166.00	170.00	4.00

Statistical Evaluation of Uniform Samples from West Region

Table 37

	SD8073 n=3					STOA n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.27	2.15	58.80	62.70	3.90	60.50	1.90	58.40	62.10	3.70
1000 Ker. Wt.	36.70	4.79	32.30	41.80	9.50	33.83	4.42	29.70	38.50	8.80
Wht.Protein 14%	12.67	0.23	12.40	12.80	0.40	12.77	0.32	12.40	13.00	0.60
Wht. Ash 14%	1.43	0.20	1.21	1.58	0.37	1.45	0.18	1.24	1.56	0.32
Hardness	80.67	8.02	73.00	89.00	16.00	78.33	2.52	76.00	81.00	5.00
Extraction	67.00	2.49	64.30	69.20	4.90	68.10	2.88	64.90	70.50	5.60
Fl. Ash @ 65%	0.36	0.07	0.29	0.42	0.13	0.33	0.06	0.27	0.39	0.12
Fl. Protein 14%	11.63	0.29	11.30	11.80	0.50	11.93	0.32	11.70	12.30	0.60
Mix Pattern	2.67	0.58	2.00	3.00	1.00	2.00	0.00	2.00	2.00	0.00
Bake Abs.	59.67	2.54	58.20	62.60	4.40	57.97	3.40	54.60	61.40	6.80
Loaf Vol.	167.33	7.51	160.00	175.00	15.00	182.00	4.00	178.00	186.00	8.00

	XW398A4 n=3					8601AE3C n=3				
	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE	MEAN	STD DEV	MINIMUM	MAXIMUM	RANGE
Test Wt.	61.27	2.40	58.50	62.80	4.30	60.33	4.20	55.70	63.90	8.20
1000 Ker. Wt.	40.53	4.25	35.70	43.70	8.00	36.17	5.33	31.20	41.80	10.60
Wht.Protein 14%	12.23	0.15	12.10	12.40	0.30	13.73	0.74	12.90	14.30	1.40
Wht. Ash 14%	1.48	0.20	1.25	1.63	0.38	1.48	0.15	1.31	1.57	0.26
Hardness	76.00	3.00	73.00	79.00	6.00	75.67	9.81	70.00	87.00	17.00
Extraction	68.23	2.39	65.50	69.90	4.40	65.93	6.29	58.80	70.70	11.90
Fl. Ash @ 65%	0.35	0.08	0.26	0.39	0.13	0.39	0.07	0.35	0.47	0.12
Fl. Protein 14%	11.50	0.36	11.20	11.90	0.70	12.83	0.91	11.80	13.50	1.70
Mix Pattern	2.67	1.53	1.00	4.00	3.00	2.00	1.00	1.00	3.00	2.00
Bake Abs.	58.70	3.58	55.80	62.70	6.90	59.37	2.10	57.30	61.50	4.20
Loaf Vol.	180.00	2.65	177.00	182.00	5.00	187.67	17.24	169.00	203.00	34.00